Advanced Energy Risk Management Services for South Bay Clean Power

Questions & Answers with Five Portfolio Managers

July 2017

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TEA
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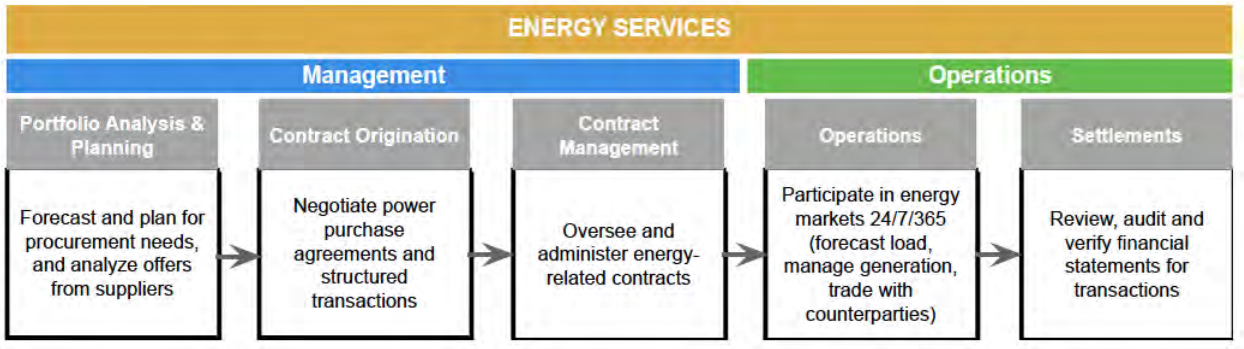
SOUTH BAY CleanPower

FOREWORD

The February 2017 South Bay Clean Power draft Business Plan recommends that the Community Choice agency contract for the services of an experienced portfolio manager early on in the implementation process.

'Portfolio Managers' are companies and nonprofits — the latter typically owned by other public power entities — that provide an integrated suite of power sector services: planning, origination, contract management, active power market operations and settlements. As visually summarized in the SBCP draft Business Plan, this comprises an 'off-the-shelf' set of services mimicking more mature power agency operations:



Contracting with these companies will allow SBCP to diversify its energy portfolio by subsequently contracting with multiple suppliers, and generally to fast-track the agency's understanding of how to apply industry-standard energy risk management analytics and practices.

Doing so is a relatively new option for California CCA programs, most of which to date have relied on consultants to broker full requirements power and limited schedule coordinator services from an Electric Service Provider (ESP) at launch.

The industry appears to be reaching a tipping point in this regard, and over the course of 2017 the following CCAs have launched with or implemented portfolio manager services:

1. Silicon Valley Power: launched in April with ZGlobal as portfolio manager;
2. Redwood Coast Energy Authority: launched in May with The Energy Authority (TEA) as portfolio manager;
3. MCE Clean Energy: replaced Shell Energy North America as the CCA's Scheduling Coordinator with ZGlobal, Inc. (to provide schedule coordination — i.e. market operations — as well as a broader range of portfolio management services);
4. Inland Choice Energy: recently closed an RFP and has entered into negotiations with a portfolio manager.

Since the publication of the SBCP draft Business Plan, the two Community Choice agencies which we based many of our design recommendations upon — Silicon Valley Clean Energy and Redwood Coast Energy Authority — have launched successfully. They have each exceeded expectations. Both have produced impressive and comprehensive Energy Risk Management (ERM) policies and real-world capabilities.

The proof of concept results are in — and confirm our recommendations for SBCP.

Deploying superior energy risk management impresses lenders as well — which is why Silicon Valley was able to achieve an industry-first in negotiating an $18MM line of credit prior to launch and requiring no municipal guarantees. Truly impressive, and a worthy example for SBCP to leverage.

Consequently, the July 2017 SBCP Financial Strategy is predicated upon the risk management best practices built into the February 2017 SBCP draft Business Plan's recommended RFP design, contracting process and subsequent implementation of the CCA — including that the CCA contract with a portfolio manager.

However, this approach is not yet widely understood across the CCA industry. To inform our RFP drafting process, and to assist in our outreach and education efforts — both for South Bay Clean Power stakeholders (members of the public as well as staff and elected officials) and other CCA initiatives as they determine the best way forward — we have prepared this "Question and Answer" style interview report with five leading portfolio managers:

1. Alliance for Cooperative Energy Services Power Marketing LLC (ACES)
2. Ascend Analytics, LLC.
3. Customized Energy Solutions, Ltd. (CES)
4. The Energy Authority (TEA)
5. ZGlobal, Inc.

Our intent is to showcase their services, philosophies, and value-add for Community Choice programs, and provide expert insights into critical issues facing our industry like the Portfolio Allocation Methodology (PAM) proposal by the utilities.

As we detail in the SBCP Financial Strategy, we believe PAM will significantly diminish the margins for Community Choice programs in California, starting most likely around 2020. We also believe this is likely unavoidable — and if not, should be planned for as though it is.

To that end, this Financial Strategy incorporates the PAM 'market transformation' into our concluding 'Risk Analysis' section, and proposes a 'Contingency Plan' to help SBCP manage financial risk through this period.

The services of a portfolio manager are critical for SBCP in this regard — and we have asked each Portfolio Manager that responded to our request to be interviewed to comment specifically on this key issue.

Lastly, we also requested feedback on key assumptions in the RFP and contracting recommended for SBCP — such as the willingness of portfolio managers to work at-risk, their general approach to assisting public agencies to develop in-house energy risk management expertise, and their willingness to assist us in reviewing and refining an RFP prior to issuance.

Samuel Golding

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COMMUNITY CHOICE PARTNERS
SECURING YOUR COMMUNITY'S ENERGY FUTURE

SOUTH BAY CLEAN POWER

PORTFOLIO MANAGER RESPONSES TO SBCP QUESTIONS

ZGlobal, Inc.

The Energy Authority (TEA)

Customized Energy Solutions, Ltd.

Ascend Analytics

ACES


ZGLOBAL
Power Engineering & Energy Solutions

Company Overview

Please give a brief overview of your company, service offerings and relevant project or client qualifications for CCAs. Include whether your company provides services to public power entities, investor-owned utilities and energy service providers or companies (ESP/ ESCO) operating in competitive retail markets. Please include useful metrics such as energy and peak load under management in California or in other markets, years of experience, number of control centers, etc.

ZGlobal consists of five major business units that are aligned with the services that we provide to clients. Those services and aligned business units are shown in the table below.

Power Engineering	Strategic Planning	Market Analytics	Infrastructure Development	Electric Operations
Planning & Analysis	**Reliability & Compliance**	**Asset Valuation**	**Planning & Implementation**	**Energy Scheduling**
Transmission & Distribution Systems	FERC/NERC Compliance	Production Cost & Revenue Modeling Forecast	Site Assessments	24x7 Operations
Power Flow Studies	Balancing Authority/Grid Integration	Cost Benefit Analysis	Project Feasibility Studies	CRR Allocations
Feasibility Studies	Enterprise Energy Management	Acquisition Valuation & Analytics	Project Finance Analysis	e-Tagging
System Impact Studies	ISO Market Assessments	Energy, Ancillary Services & Capacity Valuation	Interconnection/Utility Interface	Outage Coordination
Facility Studies	**Regulatory & Rates**	**Energy Market & Analytics**	Renewable Resource Assessments	Forecast Solar Generation (DA/HA)
Renewable Generation Integration	Resource Planning	LMP Forecasts & Market Assessments	Detailed Design & Engineering	Bilateral Transactions
Site Assessments	Expert Witness Services	Congestion Market Assessment & Optimization	Environmental Studies & Permitting	OATT Schedules
Regulatory Assessments	Tariff Consistency	Infrastructure Utilization and Constraints	**Asset Management**	Settlements & Billing
Generation Interconnection Support	FERC Transmission Rates Analysis	**Energy Settlements**	EPC Contract Management	**Portfolio & Risk Management**
Engineering & Design	Transmission Risk Assessment	Front, Middle & Back Office Integration	Operations & Maintenance Services	Portfolio Modeling & Optimization
Preliminary & Detail Design	State & Federal Regulatory Services	Shadow Settlements	Energy Production Monitoring	Financial Settlements
Single-Line Diagrams	Market Advisory Services	Settlement Verification & Education	Power Purchase Agreements & Contracts Review	Risk Assessment & Policy Review
Equipment Specifications	Risk Performance Management	Power Purchase Agreement Verification	Owner's Representative	Operating Procedure Development
Interconnection Facility Designs	Contract Negotiations			Risk Policy Development & Implementation
Site Plans & Elevation Layouts				Power Purchase Agreement Verification & Optimization
Independent Engineering Review				

ZGlobal provides portfolio management, risk management, and scheduling and settlement services to multiple clients such as community choice aggregators, public power agencies, and generation resource owners (primarily renewable resources). ZGlobal currently transacts over 9,600 GWh annually with a peak of roughly 3,000 MW primarily in the CAISO but also outside the CAISO in the WECC. A sampling of clients is shown below.

Community Choice Aggregation clients:

1. Silicon Valley Clean Energy

2. Marin Clean Energy
3. Peninsula Clean Energy

Additional clients:

1. City of Anaheim
2. Southern Company/First Solar
3. Halloran
4. Energy 2001Ormat Geothermal
5. CalEnergy Geothermal
6. Windstream
7. Silver Ridge
8. Municipal Energy Agency of Nebraska

In addition, ZGlobal is the system administrator for the Southwest Reserve Sharing Group (SRSG), whereby ZGlobal monitors members' response to outages and subsequent obligations to provide assistance 7x24. Members of the SRSG are shown below.

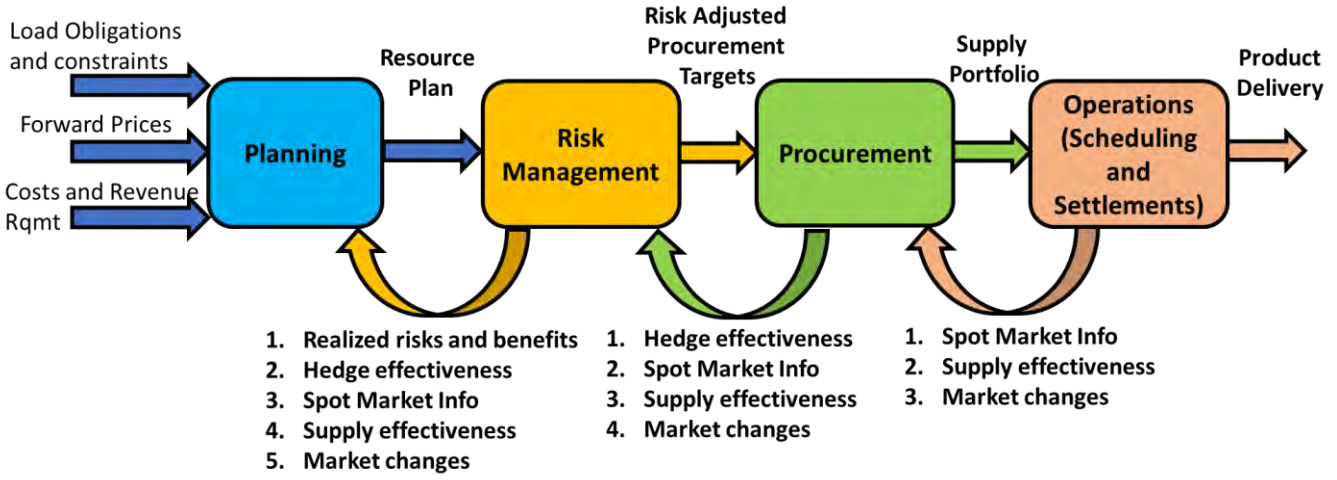
Benefits and Risks of Portfolio Manager Approach

Please compare the potential benefits for a CCA to launch using your services as a portfolio manager instead of the broker + ESP full requirements solicitation pathway. This is described in the South Bay Clean Power draft Business Plan (the "Business Plan") [1] ***on pages 2-4 and 17-***

[1] Available online at [https://southbaycleanpower.files.wordpress.com/2017/02/sbcp_draft-business-plan_feb15_2017.pdf]

19. Are there potential shortcomings or risks inherent in this approach, and if so, what mitigating strategies and processes would your company employ?

The Business Plan describes the benefits of structuring an approach that integrates resource planning, risk management, energy procurement, and energy scheduling and settlements. As an operational model, this integrated approach is better than the alternative of a broker soliciting offers to provide products required by the CCA. The reason is that the risk function is incorporated in the process as well as providing feedback loops among the functions. The diagram below illustrates the benefits of an integrated approach to planning, risk management, and day-to-day operations.



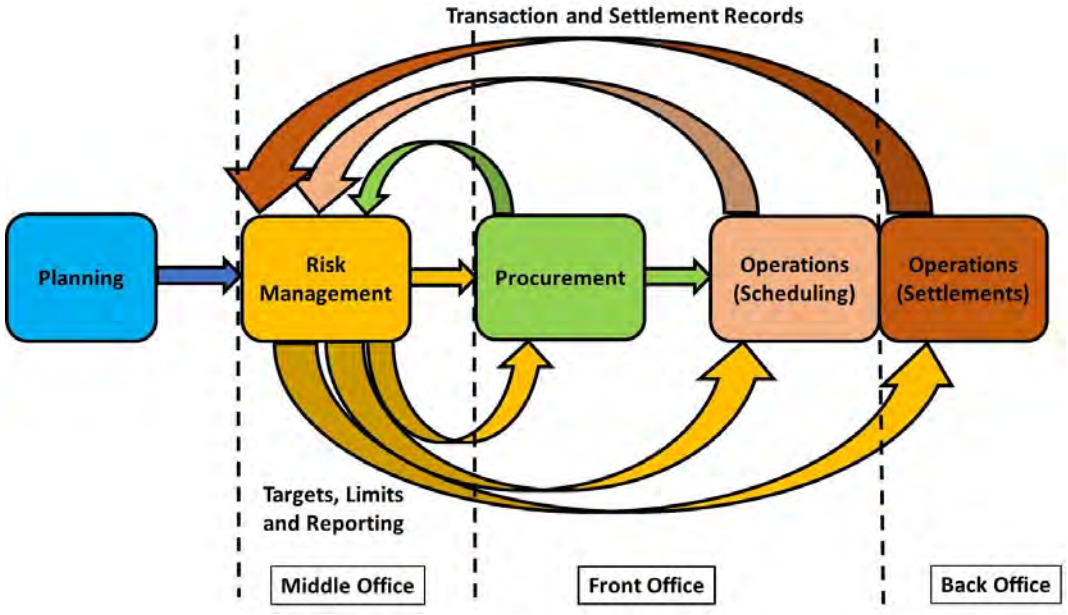
The Planning function utilizes expected load obligations and other known requirements, a forward price curve used to determine expected costs, and revenue needed to sustain the CCA to develop a resource plan. The Risk Management function utilizes the resource plan to develop risk-adjusted procurement targets for use by the Procurement function. The Procurement function acquires electricity supply based on the targets from the Risk Management function. Finally, the Operations function schedules the supply into the daily and intra-day electricity markets for delivery to the CCA's customers and settles the contracts with the suppliers.

The feedback loop between the functions is critical. The Operations function provides spot market information, supply effectiveness and changes to the market for use by the Portfolio function for its next round of procurement. The Procurement function provides that information along with the effectiveness of the supply in meeting obligations to the Risk Management function. The Risk Management function in turn supplies that information and risks and benefits realized by the executed supply portfolio to the Planning function. The functions logically flow from one to another and need intra-function information and data to perform well.

Regarding the contracting process used to deploy this operational model, a CCA has several options. A CCA may choose to hire more than one contractor to provide these services, for example. In this case, the services from separate vendors must be integrated within a holistic and transparent framework. For CCAs that hire staff with relevant power industry expertise early on, this is a viable option that should be considered (as described as an option at the bottom of page 3 of the SBCP Plan).

This is the process that SVCE has incorporated, by hiring a former municipal utility manager as the CCA's Executive Director and deploying two separate entities an Operations Manager to provide the Operations and Risk Management functions and a Portfolio Manager to provide Planning, and Procurement functions. This approach has been extremely successful at SVCE because the roles and responsibilities between the two entities providing services are clearly defined. In addition, both entities work well with each other and the CCA's expert staff. It also provides SVCE with a second set of eyes on its activities and allows for meaningful interaction to vet issues as they arise. Roles are delineated and aligned within the Energy Risk Management Policy (ERM) that SVCE's Risk Management team of technical consultants has drafted.[2]

As the SBCP plan recommends, a single portfolio manager could be engaged to provide all necessary services. In the absence of sufficient oversight and adequate process controls, the risk in employing one separate entity to provide all the functions is that the that middle office functions (risk management), front office functions (procurement), and back office functions (settlements) might be performed without the separation needed to ensure proper risk structure. The middle office must be independent so that it can ensure that all transactions and procurement actions can be accounted for and are consistent with agreed upon risk management policies and procedures. In addition, a second set of eyes on the procurement, planning and risk functions can provide checks and balances One entity can perform all functions, but there must be bright lines between the roles and responsibilities. The diagram below illustrates the responsibilities of the front, middle, and back offices, along with the procurement functions and how the sharing of responsibilities could be distributed.



[2] Agenda, SVCE Board of Directors Meeting, 10 May 2017, Draft ERM on pages 20-35. Available online: [https://www.svcleanenergy.org/files/managed/Document/797/2017-0510%20Agenda%20Packet%20REVISED%20%28F%29.pdf]

The Risk Management function is the same as those proscribed by a Middle Office. The Middle Office sets the limits, ensures that procurement activities comport to those limits and provides regular reporting of procurement activities and compliance with targets and limits. The Procurement and Operations Scheduling functions are synonymous with Front Office duties. The Front Office engages in transactions and ensures that products are delivered per contract. The Front Office provides transactional records to the Middle Office for tracking purposes. The Operations Settlement function is the Back Office. The Back Office is responsible for settling with counterparties and matching transactions with invoices. When there is a discrepancy between Front Office transaction records and Back Office settlements, the Back Office will alert the Middle Office and Front Office of the discrepancy. The feedback loops between the functions and Offices ensures a closed loop, integrated approach to procurement and risk management.

A single entity can and do effectively perform all five functions (Planning, Risk Management, Procurement, Operations Scheduling and Operations Settlements). A second approach is to divvy functions among entities. A logical segregation of duties based functions could be allocated by Planning, Procurement, and Risk Management for one entity, and Operations Scheduling and Operations Settlements to another entity. The Risk Management function could also be rolled in with the Operations functions. Either of the approaches can work, the key is establishing bright lines of responsibilities and clear and regular communication and information transfer between functions.

Managing Risk: the PCIA and PAM Challenge

The Investor Owned Utilities proposed to replace the PCIA (Power Charge Indifference Adjustment Mechanism) with the PAM (Portfolio Allocation Mechanism). This proposal was formulated primarily by Southern California Edison during a series of PCIA workshops held with CCAs and other industry stakeholders. PAM is summarized on pages 107-109 of the Business Plan, and more recently updated and detailed in the IOU's joint filing A.17-04-__ (dated 25 April 2017 and available online here[3]) in CPUC Rulemaking 03-10-003. The PAM proposal is a specific area of regulatory uncertainty that will likely impact CCA portfolio management and costs in the near term. Please describe how your company could assist CCAs in structuring portfolios and managing risk in this context. Please also refer to "Enabling Coordination between Southern California Edison & Community Choice" on pages 9-10 of the Business Plan.

ZGlobal would incorporate the PAM as an input to the net open position calculation. By incorporating the attributes allocated to SBCP, the net open position requirements are reduced

[3] Available online: [http://insideedison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/254/files/20173/PAM%20Joint%20IOU%20Application.pdf]

based on the characteristics of those attributes. Procurement would take that into account. ZGlobal would work with the CCAs to determine if it is best to convert the PAM costs to a one-time lump sum buyout or value the PAM based on forward price curves and incorporate costs spread out over a period that could span the life of the IOUs' contracts or most likely, a shorter period that is better aligned with the CCAs' procurement horizon. (Note that although these regulations are still under development, these options are considered by the utilities' initial application).

Under the latter option, ZGlobal would anticipate working with SCE to receive utility portfolio data on a regular basis, in order to assess the magnitude of these cost obligations under different scenarios, and to construct an appropriate portfolio strategy for the CCA. Again, these regulations are under development, but do appear to anticipate the transparent exchange of utility data required for these calculations (under confidentiality).

Structuring Services for a Regional "JPA of CCAs"

South Bay Clean Power may issue the forthcoming RFP for its CCA, or join with other CCA initiatives to form a regional Joint Powers Agency "JPA of CCAs" to issue the RFP and provide services to all member CCAs. Please refer to pages 39-44 of the Business Plan for details. Is your company familiar with this governance structure, which is based on NCPA and SCPPA (JPAs of municipal utilities and irrigation districts in California)? Does your company have any experience in providing services to similar entities or groups? Please briefly describe how your company would maintain separate portfolios, settlements, etc. for each member CCA while facilitating joint planning and purchasing opportunities, etc. What are the inherent advantages or disadvantages in this approach versus having each individual CCA contract for services?

ZGlobal is familiar with the structure of NCPA and SCPPA. We have worked both with separate members of SCPPA and SCPPA as a whole. We currently schedule resources acquired by SCPPA on behalf of its members and allocate to individual members based on contract share. In addition, ZGlobal works with MEAN, which is comprised of over 60 individual members between the WECC interconnect and Eastern interconnect, and participates in MISO, SPP and CAISO markets.

ZGlobal employs systems that allow for bifurcation of portfolios among members for operations and settlements. For planning, we would need to engage the CCA as a whole and follow up with individual communities as needed to ensure that their specific needs are satisfied when they are different from the CCA allocations.

The main advantage of the joint approach is economies of scale and the lack of a need to reinvent the wheel for each individual entity. Each entity may have its individual needs or mandates, but they don't necessarily need a separate service provider when a competent service provider is managing the overall portfolio at the CCA level while recognizing the one-offs of the individual communities.

The disadvantage is that a community may believe that it has lost its independence or subsidizes another community within the CCA. However, those perceptions are outweighed by the advantages described in the paragraph above.

Initial Portfolio Strategy, Modeling and Origination

Please describe the process by which your company would assist a CCA in structuring its power portfolio prior to launch and during the initial period of operations. In your opinion, would this decrease or enhance local control for a CCA in terms of transparency, price, flexibility and risk management in selecting power sources to serve their community? Would this decrease or enhance the ability of the CCA to contract for and integrate new renewable and local distributed energy resources while managing risk? Why or why not?

As described more fully in our response to "Benefits and Risks of Portfolio Manager Approach" (above), the operational model recommended in the SBCP Plan enhances local control and energy risk management for CCAs in various ways.

An important, foundational first step for new CCAs is to draft and adopt a comprehensive Energy Risk Management policy ("ERM"). As mentioned previously, SVCE's draft ERM is available online to review.[4] The ERM delineates the responsibilities and authorities of staff and contractors involved in managing the CCA's power portfolio. It is also an important process in terms of educating and incorporating feedback from the CCA's stakeholders (Board members, staff, citizen committees and members of the public) on the various real-world tradeoffs inherent in energy decisions, and how those decisions will be made on a practical basis for their community.

At a high level, the series of technical steps required to structure an initial power portfolio for a new CCA are summarized below:

CCA-Wide

1. Obtain load and customer data from the local utility;
2. Convert data into blocks of energy, RPS, and RA requirements that can be valued on a forward basis;
3. Analyze price and energy impacts of utility non-bypassable charges on CCA portfolio strategy (e.g. PCIA/PAM as well as capacity mechanisms such as CAM);
4. Determine the net open position and value of the net open positions (energy, capacity, RPS, carbon and transmission);
5. Incorporate the availability, price and energy impact of local and distributed energy procurement opportunities for the CCA (as directed — this may be a policy priority for certain CCAs);
6. Determine the revenue needed from customers to offset the CCA's total revenue requirement (i.e. procurement, operations and financing costs as well as reserve targets) and applicable non-bypassable charges as compared to local utility rates;

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[4] Agenda, SVCE Board of Directors Meeting, 10 May 2017, Draft ERM on pages 20-35. Available online: [https://www.svcleanenergy.org/files/managed/Document/797/2017-0510%20Agenda%20Packet%20REVISED%20%28F%29.pdf]

7. Begin the process of short-term procurement consistent with the launch date of the CCA to allow for transition from the utility and customer transfer to stabilize;
    a. Utilize standard, industry-accepted contracts to standardize transactions, and minimize need for individual negotiations of terms and conditions;
    b. Monitor the market to identify trends and conditions to incorporate in the procurement process;
8. This includes annual and monthly CRRs (congestion revenue rights, which help to offset transmission losses for the CCA).
9. Monitor results of scheduling and settlement to recalibrate forward positions, load forecasts, revenue streams and portfolio costs;
10. Modify procurement strategy accordingly.

Optional: Individual Communities

- ☼ If individual communities have needs or requirements different from the CCA, incorporate those into a one-off portfolio as-needed.

This process allows for a smooth transition with an appropriate amount of flexibility to account for uncertainty in the initial transition phase. Customers are enrolled over the course of the month, according to their meter read cycle, and opt-out patterns may vary somewhat in relation to local factors. This is taken into account for the initial procurement strategy.

After this stage, once we begin to receive feedback from operations, we can them move toward locking in longer terms and additional local and distributed energy resources, and fine-tuning matching revenue streams from customers to costs incurred from procurement — while also tracking and incorporating the energy and price impact of any applicable regulatory risk factors (e.g. PCIA/PAM).

The process also allows the CCA to dictate how it wants to brand its portfolio. The brand could be green, carbon-free, local, least-cost or whatever is important to the CCA communities.

Willingness to Inform RFP Design & Contracting Process

Contracting for portfolio management services is a relatively new development for CCAs, and the design of the Request for Proposals is a critical stage in this process. We are drafting one such RFP currently, and intend that it be a template for (or at least help inform) extant and future CCA initiatives. Would your company be willing to review and provide comments during the drafting process? The draft would be publicly posted, and advertised for feedback from industry experts.

Yes, ZGlobal would be willing to provide input as part of a public process, on the understanding that this would not preclude us from responding to the RFP to provide the services requested.

The information laid out in the draft Business Plan is comprehensive and well thought out. ZGlobal offers a number of services described in the Business Plan, specifically:

1. Management Functions
    a. Energy Management

i. Planning and Analysis
ii. Distributed Energy Resource Evaluation, Measurement and Verification
iii. Load and Price Forecasting
iv. Fundamental Modeling and Analysis
v. Portfolio Development and Valuation
vi. Portfolio Reporting
vii. Procurement Policy Analytics
viii. Integrated Resource Planning

b. Contract Origination
c. Contract Management

2. Operational Functions
   a. Energy Operations
      i. Scheduling, Trading and Market Operations
      ii. Settlements and Operations Services
      iii. Bulk Power Information and Data Management

Willingness to Engage in At-Risk and Performance Based Contracting

Would your company be willing to work at risk during the implementation of the CCA, similar to how the Redwood Coast Energy Authority structured their contract with The Energy Authority? These costs would be agreed to and paid back over a period of time after the successful launch of the program. This strategy, which distinguishes between three consecutive contract phases with different at-risk provisions, is described in detail on page 69-72 of the Business Plan, and incorporated into the financing strategy section on page 64. Additionally, please describe any services your company offers under specific performance-based fee structures (refer to 74-75 of the Business Plan), if any. Please offer any feedback that would enhance either contracting strategies.

ZGlobal is amenable to working at risk by deferring payment for services until the program is launched and begins to realize revenues from customers with off-ramps similar to what was put in place for the Redwood Coast Energy Authority.

Financing Strategy

Please refer to pages 64-66 of the Business Plan for our recommended financing strategy. Would your company be willing to produce financial projections for the CCA as part of the at-risk scope of work and — in coordination with local government staff — negotiate loans or other financial products (for execution by the SBCP JPA or JPA of CCAs, as applicable) for power financing and working capital requirements during the implementation process? Please briefly describe this process and timeline, and any advantages your company could offer in securing the requisite financing on favorable terms.

ZGlobal is willing to provide financial projections for SBCP to reflect the roll-in of supply contracts and customers. Although ZGlobal has provided support in contract negotiations and financing, it has been primarily in the role of assessing, analyzing and explaining ramifications of contract provisions, allowing the principal to decide the best course of action. This maintains the clear roles and responsibilities between entities. ZGlobal would be willing to serve in that capacity for SBCP.

Transitioning Responsibilities to CCA Staff

Would your company be amenable to assisting the CCA in developing staff capacity, with training support and the managed transition of certain responsibilities from your company to CCA staff over the contract term? This is described in more detail on page 45-48 of the South Bay Clean Power Business Plan. Examples of this could include drafting sections of the CCA's Business Process Manual pertaining to your scope of services, offering fee levels that decrease as certain responsibilities are transitioned (or fee structures that can switch from managed services to software-as-a-service), education and training for new CCA staff, etc. Has your company provided this support to other clients? Please provide any feedback that would enhance this strategy.

Yes, ZGlobal is open to providing training to staff and assisting transition of certain functions to staff as determined by the CCA. ZGlobal has provided training to SCPPA members, MEAN as well as Imperial Irrigation District (IID). For IID, ZGlobal acted as IID's Scheduling Coordinator while in parallel provided training to allow IID to establish its own Scheduling Coordinator ID and take over the Scheduling Coordinator role after roughly one year.

The timeline on page 47 of the SBCP Business Plan is fine as-is; no need for revision or refinement.

Distributed Energy Resources

Does your company offer services that support the use of Distributed Energy Resources in planning, origination, contract management, operations and settlements (or other services)? Please describe any relevant experience and qualifications, prioritizing CAISO market activities. If not, describe how your company would expect to integrate its portfolio management services with a third-party hired to provide these DER services, and any relevant experience in this regard.

ZGlobal works with developers that have interconnected DERs to the IOUs' distribution system. We work in all areas from the CAISO's NRI modeling of the resource to scheduling, settling, and monitoring. That effort entails aggregation, controls, bidding/scheduling and optimizing DER operation, settlements, and interaction with the local utilities. We are on the forefront in this area. This operationally-derived data, as it evolves, can be used to update less granular DER assumptions in planning exercises; this would continuously refine the accuracy of DER for use in forecasting and procurement going forward.

Regarding coordination on DER between SCE and Community Choice, ZGlobal is currently engaged in the process of marketizing the distribution portion of the grid, and working with public power local distribution providers in upgrading the reliability of their systems. Marketizing the distribution system entails locating substations on the grid that could benefit from DERs to

eliminate or postpone the need for equipment upgrades. This allows the local utility to benefit from deferring or eliminating costs. But it also requires active management of the distribution circuits and DERs to realize benefits. The alternative is for distribution operators to prohibit operation of DERs during certain time of year or time of day based on static studies that utilize data snapshots.

Currently, the distribution portion of the grid is separated from the wholesale market, and the CAISO models the distribution systems of the utilities as injections onto or takeout of power from the grid at the transmission and distribution interface points. Resources connected to the distribution system are modeled at the transmission level at the substation; in other words, the wholesale grid operator has no active insight into or control over how the use of distributed generation assets impacts the distribution grid — even though the wholesale grid operator is increasingly dispatching aggregated fleets of distributed resources. Past a certain penetration of these distributed resources, the impacts on the distribution grid will have to be taken into consideration. Consequently, ZGlobal believes that the distribution system will evolve to the point of semi-independence at some locations, especially those targeted by CCAs. This will accelerate the CCAs' need to rely on the CAISO for services, which is expected to reduce costs. The regulations and protocols governing these wholesale market rules and interactions with SCE as the distribution utility will have to be developed and refined; throughout this process, SBCP would be able to leverage ZGlobal's experience and pro-active engagement on these issues to identify and pursue opportunities to accelerate DER as a key component of the CCA's portfolio.

Regulatory and Market Intelligence

Please briefly describe the extent to which your company monitors, analyzes, and advises on extant and evolving legislative, regulatory and market policies, rules, procedures, et cetera (as applicable for CCAs). Does your company do so only for compliance purposes, or do you also engage on behalf of or advise clients on strategic opportunities for engagement in these forums? Please offer any additional comments regarding these services, as appropriate, in the context of the evolving legal and regulatory nature of the California CCA market.

ZGlobal's approach has been to monitor specific rules, and policies that have a direct impact to our clients. We do not have a group of folks that monitor general stakeholder proceedings but rather target specific proceedings. The CCAs for which we currently provide services have their own policy folks and have not requested ZGlobal to provide that service. However, we are aware of the issues and participate as needed. For example, Ziad Alaywan will attend the CPUC En Banc hearing on direct access. Additionally, we could monitor specific proceedings and venues upon request, at agreed-upon rates.

Additional Documentation

Please list any additional documentation attached to supplement your responses or provide details on your company and services.

Please refer to the attached brochure.

ZGlobal is flexible and committed to providing services as needed by CCAs as they move forward. Please feel free to contact us with questions or when you'd like to bounce ideas off our team. We thrive in that environment.

ZGlobal offers a depth and breadth of services that are uniquely aligned with the needs of CCAs. Our team consists of folks that were instrumental in establishing the CAISO markets and processes or participated in them. A few of our key personnel are listed below.

- Ziad Alaywan – Headed up the CAISO markets from the on-set. He was CAISO employee #2.
- Christine Vangelatos – Led the CAISO's effort to implement settlement system and processes
- Kevin Coffee – After PG&E's bankruptcy, established PG&E's desk for procurement of its load, portfolio management of its hydro, thermal, QF and renewable energy resources, and hedging risk on a forward basis
- Kyle Hoffman – Implemented the CAISO's scheduling processes and structure to incorporate existing transmission rights of non-CAISO participants into the CAISO markets
- Brian Rahman – Program manager at the CAISO responsible for rolling out the operational processes for transition from a zonal to nodal market
- Nisar Shah – Transmission system engineer at the CAISO was responsible for in-depth power system analysis across the CASIO's system and between balancing areas

Although these folks are not the entire team, it provides insight as to level of experience and understanding that allow us to provide integrated services from engineering analysis, resource and transmission planning, portfolio management, risk management, settlements and scheduling, and an overall understanding of the integrated nature of the current structure and how it is evolving with the new CCAs, technology and changes to end-use customer behavior.

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Community Choice Aggregation

Leading the Way for Communities Across the Globe

ZGlobal is at the forefront of the emerging Community Choice Aggregation (CCA) industry. CCA's are changing the face of the energy industry, as they allow local governments to pool their electricity load and purchase or develop power on behalf of its residents and businesses. The secured power most often emanates from renewable energy resources, such as wind and solar. Each CCA partners with its region's current utility to deliver power, maintain the grid, consolidate billing and perform other customer service related functions. ZGlobal works with CCA's by providing necessary services required of each CCA to function as its own electricity service provider. Whether the newly formed CCA needs an assortment of services or a select few, ZGlobal's customized solutions are the choice of established and emerging CCA's.

CCA Services Include:

Portfolio & Risk Management

- Portfolio Modeling & Optimization
- Financial Settlements
- Risk Assessment & Policy Review
- Operating Procedure Development
- Shadow Settlements & Settlement Verification
- Power Purchase Agreement Verification
- Risk Policy Development & Implementation
- Power Purchase Agreement Verification & Optimization

Energy Scheduling

- 24x7 Operations
- CRR Allocations
- e-Tagging
- Outage Coordination
- Forecast Solar Generation (DA/HA)
- Forecast Customer Load
- Bilateral Transactions
- OATT Schedules
- Settlements & Billing
- Dynamic & EIM Scheduling

Strategic Planning

- Resource Planning
- State & Federal Regulatory Services
- Market Advisory Services
- Risk Performance Management
- Contract Negotiations
- Integrated Resource Planning
- Revenue Allocation Modeling

Market Analytics

- Production Cost & Revenue Modeling Forecast
- Cost Benefit Analysis, Acquisition Valuation & Analytics
- Energy, Ancillary Services & Capacity Valuation
- LMP Forecasts, Market Assessments & Optimization

For more information contact us: 604 Sutter Street, Suite 250 | Folsom, CA 95630 O: 916.985.9461 | E: info@zglobal.biz

ZGLOBAL
Power Engineering & Energy Solutions

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Power Engineering | Strategic Planning | Market Analytics | Distributed Generation | Electric Operations

Leading Energy Solutions in a Competitive Marketplace

ZGlobal engineering assesses the impacts of financial objectives to existing and planned future projects. Our assessments expose the technical and financial hurdles and provide a clear picture to aid the decision making process. ZGlobal's team of engineers are entrusted by our clients to provide honest, reliable and technical expertise to ensure a project meets the specifications and deliver as designed.

We take an active role by teaming with the owner in the planning, financing and implementation stages as required. The expertise and depth of industry knowledge make our engineers well positioned to advise our clients on their projects. Additionally, we provide third party engineering review and assessment review for due diligence efforts and use industry leading technology and best practices to ensure our clients get the most from our services.

Benefits to Our Clients Include:

- Provide expert interconnection services
- In-house Power Flow, Dynamic Voltage & Stability Analysis (PSLF & PSS/E) expertise
- Provide third party engineering/ owner engineering representation
- Full service solution from planning to full operations
- Perform independent analysis for project financing
- Close proximity to, and strong relationships with CAISO

Planning & Studies

Transmission & Distribution Planning

Site Assessments

Power Flow Analysis & Feasibility Studies

System Impact & Facility Studies

Renewable Generation & Energy Storage Integration

Regulatory Assessments

Generation Interconnection Support

Curtailment & Deliverability Analysis

Design & Analysis

Preliminary & Detail Design & Engineering

Site Plans & Elevation Layouts

Interconnection Facility Design & Cost Estimates

Equipment Specifications & Costs

Independent Engineering Analysis

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Providing a Clear Picture of Market Opportunities

ZGlobal experts have many years of experience in the energy industry, and have performed a full range of energy-related services. We continuously strive to enhance our services to comply with new standards and expectations of the regulators. We team with our clients to continuously prepare for an audit and report current industry activities and trends that provide confidence within your business.

Regulatory & Rates

Resource Planning

Expert Witness Services

Tariff Consistency

FERC Transmission Rates Analysis

Transmission Risk Assessment

State & Federal Regulatory Services

Market Advisory Services

Risk Performance Management

Contract Negotiations

Reliability & Compliance

FERC/NERC Compliance

Balancing Authority/Grid Integration

Enterprise Energy Management

ISO Market Assessments

Benefits to Our Clients Include:

- Full service firm with access to industry leading experts
- Provide detailed analytics and strategy development
- Built-in compliance standards by applying processes consistent with NERC standards & industry protocols
- Assist clients in understanding potential costs savings
- Full engineering staff to perform independent analysis
- Development & implementation of strategies designed to reduce our clients cost and risk

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Adding Value to Your Assets

ZGlobal's analytics team has managed and valuated asset portfolios for decades, which put us in a unique position to quantify the value of our clients' assets and translate the data for our clients' investment decisions. We recognize that developing, acquiring or selling capital assets is a highly complicated undertaking. We use highly proven technologies combined with in-house customized analytics to provide our clients with solid information to evaluate their business cases. We work with our clients to understand the various potential scenarios and provide them an array of viable options that balance costs and potential revenue with risk appetite. We provide analytical services at each stage of an asset's life cycle. Services range from assessing future value of assets via cost modeling to developing market strategies and evaluating benefits of current portfolios. ZGlobal's analytics team has the industry experience and knowledge to evaluate our clients' assets from inception to settlements in energy and capacity markets.

Asset Valuation

Production Cost & Revenue Modeling Forecasting

Cost Benefit Analysis

Acquisition Valuation & Analytics

Energy, Ancillary Services & Capacity Valuation

Forecasting & Analytics

LMP Forecasts & Market Assessments

Congestion Market Assessments & Optimization

Infrastructure Utilization and Constraints

ISO Market Assessments

Energy Settlements

Front, Middle & Back Office Integration

Shadow Settlements

Settlement Verifications & Education

Cost Allocations

Benefits to Our Clients Include:

- Provide grid reliability to commercial value
- Determine the life-cycle cost of an asset
- Assist clients in understanding their expected revenues
- Provide independent analysis of project benefits for ratepayers
- Perform comprehensive studies of economic and reliability benefits
- Help determine potential energy cost savings
- Provide detailed analytics and strategy development

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Full Service Solutions for Your Assets

ZGlobal offers a start-to-finish solution for our clients looking to develop an asset, from pre to post development and anywhere in between. Our team offers a broad range of experience with Utilities, Counties and State & Federal agencies. By integrating our experienced staff, utilizing our business relationships and applying our technical knowledge, we provide a fully integrated service to our clients. We apply our cutting-edge advisory services related to the development of an asset and strategically align our staff of engineers, market analysts and industry experts.

Benefits to Our Clients Include:

- Offer full service solutions from planning to full operations
- Provide detailed engineering for each project phase
- Assist clients in understanding their expected revenues
- Provide comprehensive studies of economic and reliability benefits
- Conduct detailed analytics and strategy development
- Offer analysis for project finance
- Perform independent analysis for project financing

We've built positive relationships with State and Federal agencies, local public power and irrigation districts, regulated and non-regulated utilities, water agencies, generation owners and developers, and industry vendors to ensure our clients receive the best service possible

Our Distributed Generation services include planning, engineering, feasibility, cost and risk benefit, procurement, engineering, permitting, document control and procedure development based on industry best practices and operating procedures. Our services are tailored to assist our clients to maximize their performance and returns from their assets. We offer a complete, integrated solution, ultimately saving our clients time and costs.

Project Planning & Implementation

Site Assessments

Project Feasibility Studies

Project Finance Analysis

Interconnection/Utility Interface

Renewable Resource Assessments

Project Management

Environmental Studies & Permitting

Owner's Engineering

Asset Management

EPC Contract Management

Operations & Maintenance Services

Energy Production Monitoring

Power Purchase Agreements & Contracts Review

Owner's Representative

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Experience You Can Rely On

Our services range from Energy Scheduling, Reliability Services, Portfolio and Risk Management and Enterprise Energy Management. We offer a California ISO certified Scheduling Coordinator function via our operations center, which is directed and trained by the pioneers of the California ISO. Our operations are secure and staffed by a team headed by NERC certified personnel 24 hours a day, seven days a week. We provide value to our clients by offering an integrated operations service that leverages the insight gained by our team's previous industry experience. We utilize and provide comprehensive business experience and tools designed to support scheduling and operational needs. Our services can be custom designed to satisfy the objectives of our clients.

Benefits to Our Clients Include:

- 24x7 operations support.
- Stable costs and time savings by providing scheduling services at a set monthly cost
- Built-in compliance by applying processes consistent with NERC standards and California ISO protocols
- Development and implementation of strategies designed to reduce cost and risk
- Access to industry-leading experts so our clients can realize inherent value of their assets
- Utilization of customized software tailored to meet client needs

Energy Scheduling

24x7 Operations

CRR Allocations

e-Tagging

Outage Coordination

Forecast Solar Generation (DA/HA)

Bilateral Transactions

OATT Schedules

Settlements & Billing

Dynamic & EIM Scheduling

Portfolio & Risk Management

Portfolio Modeling & Optimization

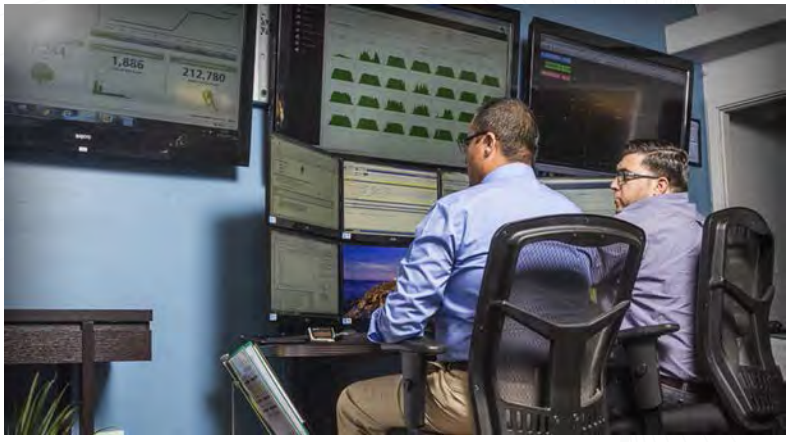
Financial Settlements

Risk Assessment & Policy Review

Operating Procedure Development

Risk Policy Development & Implementation

Power Purchase Agreement Verification & Optimization



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The Energy Authority (TEA)

Company Overview

Please give a brief overview of your company, service offerings and relevant project or client qualifications for CCAs. Include whether your company provides services to public power entities, investor-owned utilities and energy service providers or companies (ESP/ ESCO) operating in competitive retail markets. Please include useful metrics such as energy and peak load under management in California or in other markets, years of experience, number of control centers, etc.

The Energy Authority is the nation's leading not-for-profit power-marketing organization, currently managing over 24,000 MW of peak load and 30,000 MW of electric generation on behalf of 50 community-owned electric utilities around the country. TEA consistently ranks first in the nation among non-publicly traded organizations for volume of energy traded. The organization was created in 1997 to leverage the assets and load of its members and clients in the wholesale power market, resulting in commodity savings for clients and rate savings for end-use customers. By partnering with TEA, utilities and community choice aggregators benefit from state-of-the-art technology and dedicated resources provided at a fraction of the cost.

Community Choice and Related Projects

Redwood Coast Energy Authority:

In the spring of 2016, TEA was selected as part of a consortium of companies to provide the Redwood Coast Energy Authority in Humboldt County, California with a "turnkey" CCA solution. The project includes performing all aspects of CCA development from assessing feasibility through implementation and operation. TEA's specific responsibilities on the project include the following:

- Technical Study development and assistance with community outreach
- Implementation Plan development and assistance with community outreach
- Retail rate design
- Procurement plan development and implementation (including use of TEA's credit and contractual facilities)
- Request for Power Supply Proposal development and administration
- Long-term power purchase agreement negotiation assistance
- Portfolio risk management
- CAISO Scheduling Coordinator services
- Settlement validation and execution
- Assistance with regulatory monitoring with emphasis on CAISO issues

Effective May 1, 2017, RCEA went live and began providing generation services to customers in Humboldt County.

City of Davis/Yolo County (Valley Clean Energy Alliance):

TEA was selected by the City of Davis and Yolo County to develop a technical study and comparative analysis of CCA management options. Work associated with this project commenced in October 2015 and was completed in March 2016 when Davis and Yolo County governing bodies

accepted the Technical Study and approved moving forward with implementing the recommendations contained in the study. The Valley Clean Energy Alliance Joint Powers Authority is now working towards a launch in the Spring of 2018.

University of California: Technical Feasibility Study, CAISO Market Entry and Scheduling Coordinator Services:

In 2013 the University of California (UC) selected TEA to help them assume ownership of their energy future with the principal objective to build an environmentally friendly, locally controlled and eventually carbon neutral supply portfolio. The initial step was for the University to become its own Electric Service Provider and take over the supply and management of the Direct Access accounts which belong to seven of the UC campuses and three of the UC medical centers. TEA worked with the UC to develop a "Workbook" to provide a roadmap to become an ESP and a guide to managing a wholesale power program. In addition, TEA performs the following functions for UC:

- Model-assisted portfolio management including procurement and development of wholesale and distributed renewable assets;
- Contract management for power purchase agreements;
- Scheduling-coordinator functions with the CAISO;
- Retail rate level setting for campus accounts;
- Analysis and management of a CRR portfolio;
- Various other functions that are required to manage the wholesale market interface requirements of a Direct Access customer.

Effective January 1, 2015, the UC's wholesale program went live. TEA continues supporting the UC's efforts through execution of the following activities:

- Daily forecasting of hourly loads for each campus
- Submit Day Ahead demand bids
- Short-term energy, RA and CA qualified RPS procurement using TEA's credit and contracts
- Import schedule for WAPA Base Resource allocation for UCSF campus, including preparing e-tags
- Annual and monthly RA submittals
- Settlement validation and allocation of wholesale power supply costs to direct access campuses
- CRR bid strategy development and implementation
- Risk analysis and hedge strategy development
- Long-term renewable resource procurement analysis
- CAISO regulatory monitoring
- Scheduling Coordinator and contract management for two (1x20 MW and 1x60 MW) long-term solar PPAs.

TEA also continues to assist the University in developing its long-term procurement strategy to achieve a carbon-neutral power supply by 2025. In support of this effort, TEA maintains contacts

with renewable generators both inside and outside the State of California, and assists the University on an ongoing basis with evaluating the economic and operational attributes of alternative renewable generation supplies.

Related Experience

TEA provides services to 50 municipal and state-chartered load serving entities throughout the nation.

Additional qualifications and experience is placed below our responses to SBCP questions.

General Background

TEA is a non-profit power marketing corporation and is wholly owned and directed by its owners, listed below, who are exclusively municipal or state-chartered electric utilities:

- *American Municipal Power, Inc. ("AMP")*, a non-profit corporation organized under the laws of the State of Ohio;
- *City of Gainesville, Florida*, a Florida municipal corporation, doing business as Gainesville Regional Utilities ("GRU");
- *City Utilities of Springfield, Missouri* ("CU"), a component unit of the City of Springfield, Missouri;
- *Cowlitz Public Utility District*, a State of Washington public utility district;
- *JEA*, a body corporate and politic created by the laws of the State of Florida;
- *Municipal Electric Authority of Georgia* ("MEAG"), a public corporation and instrumentality of the State of Georgia;
- *Nebraska Public Power District* ("NPPD"), a public corporation and political subdivision of the State of Nebraska; and
- *South Carolina Public Service Authority* ("Santee Cooper"), a body corporate and politic created by the laws of the State of South Carolina.

TEA has received affirmation of its non-profit status from the State of California Franchise Tax Board.

TEA was founded in August 1997 by its owners (Members) to address rapid changes in the electric utility industry, to enhance the use of Members' electric generating assets through the optimization of power sales and purchases for their systems, and to assist with managing risks in the wholesale energy marketplace while creating economies of scale and reduced operating costs with respect to energy trading and marketing. In 1997, TEA opened its doors with three Members and today has 8 Members and serves an additional 42 municipal and state-chartered electric utilities throughout the nation with generating assets and contract rights approaching 30,000 megawatts.

TEA's commitment to community-based organizations has fueled its growth. TEA was formed with the primary objective of helping community-based load serving entities achieve more efficient and effective operations in complex wholesale energy markets than any of them could achieve through stand-alone operations, all while maintaining local control. TEA accomplishes this through aggregating trading and analytical expertise, maintaining depth of key staff in this competitive market, and capturing economies of scale through investments in state-of-the-art scheduling, deal

capture, settlement and other information technology systems not typically affordable to any individual organization. *A hallmark of TEA's service is the ability of TEA clients to utilize TEA's credit and contractual relationships with counterparties, including CAISO, when transacting in the wholesale marketplace, while still benefiting from a transparent and separate accounting of all transactions executed on behalf of each client.*

TEA employs 190 persons at its two primary offices in Bellevue, Washington and Jacksonville, Florida.

Western Region Office

405 114th Avenue SE, Suite 100

Bellevue, Washington 98004

Main: (425) 460-1124

Fax: (425) 372-0224

Corporate Headquarters

301 W Bay Street, Suite 2600

Jacksonville, Florida 32202

Main: (904) 356-3900

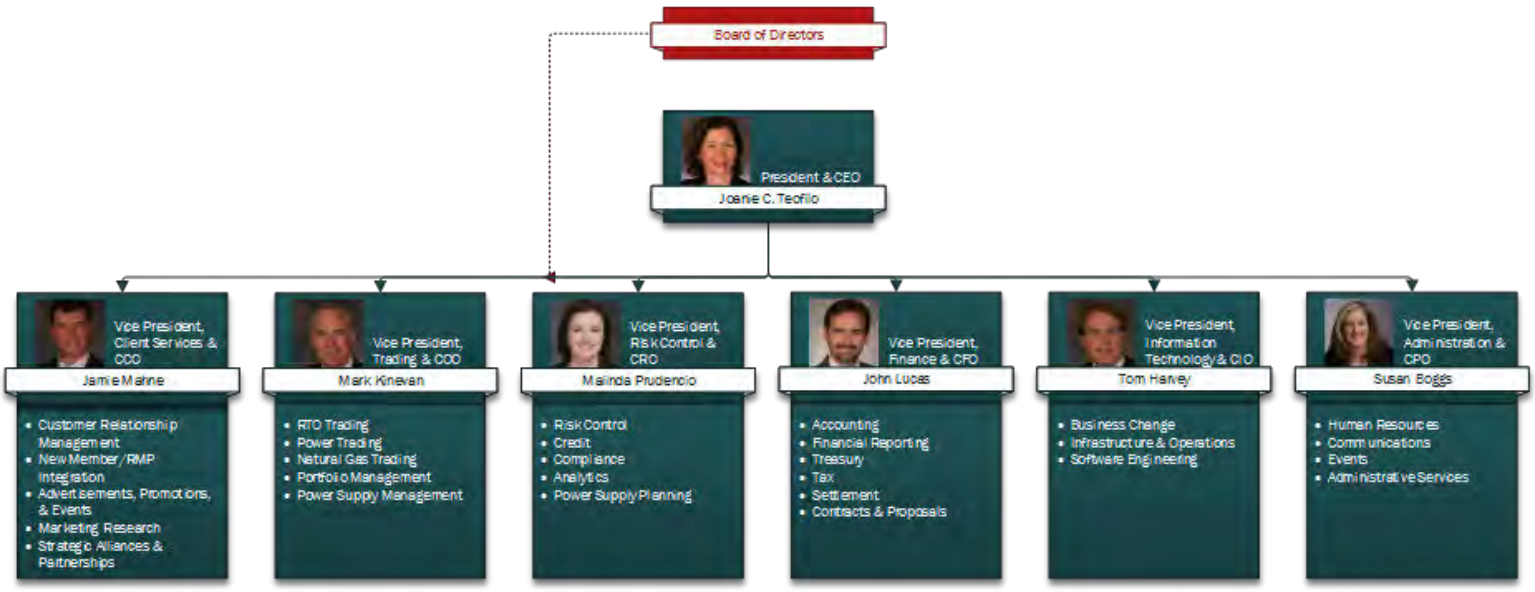
Fax: (904) 665-0201

TEA is a certified CAISO Scheduling Coordinator, and all services delivered to clients in California and the Western Electricity Coordinating Council are managed from TEA's Western Region Office. A breakdown of staff in TEA's Western Region Office is provided in the table below:

Position	No. of Employees
Forward Traders	2
Cash Traders + CAISO Resource Specialists	4
Real-time Traders (3 x 24/7 desks)	17
Energy Schedulers	4
Transmission Specialist	1
Power Planners and Analysts	11
Client Service Managers	4
IT	6
Total	49

Organization Chart

The graphic below provides an overview of TEA's organizational structure and senior management team. TEA's organizational structure reflects the segregation of duties into front- (trading), middle- (risk control) and back- (settlement) office duties common of energy trading organizations:



Benefits and Risks of Portfolio Manager Approach

Please compare the potential benefits for a CCA to launch using your services as a portfolio manager instead of the broker + ESP full requirements solicitation pathway. This is described in the South Bay Clean Power draft Business Plan (the "Business Plan") [5] ***on pages 2-4 and 17-19. Are there potential shortcomings or risks inherent in this approach, and if so, what mitigating strategies and processes would your company employ?***

Across all industries exposed to volatile market prices it is common to structure a portfolio strategy to manage market risk, as well as variety of other risks. The most basic element of managing risk is diversification – in suppliers, in locations, in technology and in timing of procurement. The broker + ESP full requirements solicitation pathway is an ineffective method of providing portfolio diversification.

Of particular importance to CCAs is managing the unique risks created by the PCIA. The risk of a CCA's rates becoming uncompetitive increases if a CCA's supply portfolio does not consider the impact of uncertainty in future PCIA (or whatever mechanism replaces it), which is very challenging to do without active portfolio management.

The PCIA creates a hybrid portfolio where a significant portion of a CCA's portfolio from a financial perspective is, effectively, inherited from the IOU in October of each year. Based on 2015 Power

[5] Available online at [https://southbaycleanpower.files.wordpress.com/2017/02/sbcp_draft-business-plan_feb15_2017.pdf]

Content Label data, this inherited component represents approximately 60 percent of the power supply requirements for a CCA located in PG&E's service territory. For SBCP (and other CCAs in SCE's territory) this value is closer to 30 percent. If a CCA's objective function for portfolio management in the early years is to reduce the risk of their generation rates, adjusted for the PCIA, from becoming uncompetitive with the IOU, these percentages represent the amount of procurement that should be conducted on an annual basis, ideally during the month of October to align with the methodology for valuing the "brown energy" component of the IOUs portfolio under the current PCIA construct. The balance of the CCAs portfolio can be procured in a diversified manner as described in the opening paragraph.

Another important element of managing PCIA risk is to use stress testing to measure rate competitiveness under a range of future PCIA charges. While it is not possible to precisely predict future PCIA charges, breaking the PCIA charge down into its three basic components (valuing the brown energy, renewable energy and capacity components of the IOU's portfolio) does enable informed stress testing to be performed as part of the risk management process.

TEA believes that this approach is especially important during the early years of CCA operation when the CCA is working to stand-up a new business enterprise, build financial reserves to provide financial stability and enable the CCA to make long-term investments in new generation and other GHG reducing resources and programs.

It is a balancing act to find the right level of diversification to satisfy competing objectives – rate competitiveness, rate stability and fulfilling long-term contract requirements for both regulatory and renewable/GHG-free portfolio goals. Active portfolio management, including active measurement of financial risk, offers the best chance of providing a framework to balance these different objectives.

Finally, a key challenge for new CCAs that are not creditworthy at startup is getting credit and contracts to participate in wholesale markets. Prior to SVCE and RCEA, this was a key motivating factor in pursuing the ESP full requirements pathway. SVCE's procurement strategy and innovative multi-party lockbox structure provides one example of implementing portfolio management at launch and addresses many traditional risk management objectives. Particularly noteworthy is SVCE's strategy of unbundling Scheduling Coordinator services from the power marketer to greatly facilitate power supplier diversification at launch and going forward.

TEA is uniquely able to offer new CCAs a portfolio management strategy combined with access to TEA's credit and contract facilities and thereby help a new CCA achieve a high level of portfolio diversification from the outset of operations. TEA may also provide a hybrid procurement strategy which includes facilitating CCA-specific enabling agreements, RFP's for supply, and procurement under TEA's contracts. The specific mix would depend upon the size, the objectives, and the preferences of the CCA.

Managing Risk: the PCIA and PAM Challenge

The Investor Owned Utilities proposed to replace the PCIA (Power Charge Indifference Adjustment Mechanism) with the PAM (Portfolio Allocation Mechanism). This proposal was formulated primarily by Southern California Edison during a series of PCIA workshops held with CCAs and other industry stakeholders. PAM is summarized on pages 107-109 of the

Business Plan, and more recently updated and detailed in the IOU's joint filing A.17-04-__ (dated 25 April 2017 and available online here[6]) in CPUC Rulemaking 03-10-003. The PAM proposal is a specific area of regulatory uncertainty that will likely impact CCA portfolio management and costs in the near term. Please describe how your company could assist CCAs in structuring portfolios and managing risk in this context. Please also refer to "Enabling Coordination between Southern California Edison & Community Choice" on pages 9-10 of the Business Plan.

PAM, like the PCIA, effectively transfers portions of the IOUs' portfolios to CCAs on an annual basis. It acts to equalize supply costs between the IOU and CCA but also results in a portion of a CCA's portfolio already, effectively, being hedged. This needs to be considered when making procurement decisions. If PAM provides greater access to IOU procurement cost information as proposed, some of the current challenges of incorporating PCIA uncertainty into portfolio management may be mitigated, (Although depending upon the final outcome, PAM may also introduce new challenges that do not currently exist under the PCIA construct.)

The mechanism for the transfer is different under PAM than the PCIA and the portfolio strategy would need to be adapted. But, a similar approach to current PCIA hedging (i.e. managing on an annual basis – to ensure that the IOU/CCA cost parity is locked in) should be used. The balance of the CCA's portfolio that is not financially transferred from the IOU should be actively managed along the diversification principles mentioned earlier.

A company offering a portfolio management solution is in a position to model the effects of PCIA/PAM and adjust portfolio procurement strategies in response. The ESP full requirements model is not easily modified to respond. There are several reasons for this, all of which inhibit timely modifications to procurement strategies: multi-year power purchase commitment for 100 percent of supply, lack of unbundling Scheduling Coordinator services from power supplier, and probable lack of a formal energy risk management policy and modeling/reporting/decision-making infrastructure.

Structuring Services for a Regional "JPA of CCAs"

South Bay Clean Power may issue the forthcoming RFP for its CCA, or join with other CCA initiatives to form a regional Joint Powers Agency "JPA of CCAs" to issue the RFP and provide services to all member CCAs. Please refer to pages 39-44 of the Business Plan for details. Is your company familiar with this governance structure, which is based on NCPA and SCPPA (JPAs of municipal utilities and irrigation districts in California)? Does your company have any experience in providing services to similar entities or groups? Please briefly describe how your company would maintain separate portfolios, settlements, etc. for each member CCA while facilitating joint planning and purchasing opportunities, etc. What are the inherent

[6] Available online: [http://insideedison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/254/files/20173/PAM%20Joint%20IOU%20Application.pdf]

advantages or disadvantages in this approach versus having each individual CCA contract for services?

In many respects, TEA is itself a virtual JPA that was setup by publically owned utilities to work together and achieve greater economies of scale in systems and people, as well as to facilitate the sharing of knowledge and experiences. CCAs are contemplating similar objectives in forming JPAs.

Specific to NCPA and SCPPA, TEA is familiar with both organizations' respective business models and has provided services to similar organizations nationwide. One example of TEA's service to an organization such as South Bay is contemplating is the service that we provide to American Municipal Power (AMP). AMP has 128 members and 16 different resource portfolios. TEA has worked with AMP to create a hybrid scenario where TEA separately models and provides analysis, strategies, market participant, and bilateral trading for the 16 portfolios, and works in concert with AMP to help them to provide settlement to each of its 128 members.

TEA's business model is built around providing customized solutions to each client while leveraging technology and people to provide economies of scale. TEA's normal practice is to maintain separate portfolios for all of its clients in its trade capture system to facilitate separate settlement and portfolio management modeling and trading recommendations.

Initial Portfolio Strategy, Modeling and Origination

Please describe the process by which your company would assist a CCA in structuring its power portfolio prior to launch and during the initial period of operations. In your opinion, would this decrease or enhance local control for a CCA in terms of transparency, price, flexibility and risk management in selecting power sources to serve their community? Would this decrease or enhance the ability of the CCA to contract for and integrate new renewable and local distributed energy resources while managing risk? Why or why not?

TEA is a not-for-profit entity dedicated to assisting publicly-owned power companies with their wholesale power needs. TEA strives to help its clients achieve their financial, environmental and operational objectives through flexible, transparent and low-cost procurement; to manage risks through stochastic models which simulate outcomes under many possible futures, track key risk metrics, and measure the impact of potential risk mitigation strategies; and, to manage their finances with pro forma financial model updated on a daily basis. This approach is applied before a CCA goes live and continues on an ongoing basis.

TEA will typically facilitate monthly risk oversight committee meetings to set and update procurement strategies and assess how well current strategy is meeting objectives and managing risks. Prior to launch, the CCA staff and board will help TEA understand their financial and environmental objectives in order that a procurement and risk management strategy can be defined to meet those objectives. A part of this process will be development and governing board approval of an energy risk management policy to guide activities. In addition, long-term procurement planning can be readily incorporated into overall procurement strategy with shorter-term market purchases as needed to meet environmental, financial and risk mitigation objectives.

TEA's overall approach is entirely oriented towards assisting our clients in meeting their objectives through developing strategy and analysis, transparent and pass-through cost-based procurement, and managing and tracking performance. Our clients have complete and ultimate control of decisions with respect to procurement. TEA exists to support our clients in whichever ways they desire. TEA's ability to provide Scheduling Coordinator services independent of a client's power supply decisions, and our willingness to customize solutions and scope to meet the unique requirements of each client is a hallmark of TEA's service. Two examples of this are provided below:

- Specific to TEA's services to CCAs, TEA worked with RCEA to find a solution for contracting with local renewable generators from the outset of operations to help meet an important local goal for Humboldt County. This includes TEA providing Scheduling Coordinator services for the local generator(s). TEA also procured additional non-local (within and outside California) renewable, greenhouse gas free, and system power supplies on the wholesale market from a variety of suppliers to meet RCEA's initial procurement objectives of 40% renewable and 80% non-fossil fuel supply. All of these procurement activities involved canvassing the market and/or looking at offers on electronic exchanges and then transacting the best offers using TEA's credit and contracts for all market-based transactions. The timeframes to execute procurement ranged from less than an hour (for the first year's supply of system power), to a few days for GHG-free supply. This type of quick and flexible procurement is made possible because TEA already has many enabling agreements in place, an experienced and knowledgeable group dedicated to transacting and structuring deals in the wholesale markets, and all of the risk management and risk control processes and people in place to ensure that exposures and risk profiles are minimized.
- Specific to portfolio management, TEA assisted 13 northwest public utilities to incorporate a new and complex power purchase agreement offered by the Bonneville Power Administration that linked power deliveries to the actual physical constraints of the Columbia River Power System. When an "off the shelf" solution was not available, TEA worked in partnership with the 13 utilities to develop a customized simulation, optimization and scheduling solution. This system – called the "Optimizer" – runs a sophisticated mixed-integer program that solves hundreds-of-thousands of variables several times an hour in order to schedule water flows and energy generation through the six federal dams on the river hourly over a ten day timeframe in order to maximize revenue while best meeting load and integrating variable (wind) generation into our clients' portfolios.

Willingness to Inform RFP Design & Contracting Process

Contracting for portfolio management services is a relatively new development for CCAs, and the design of the Request for Proposals is a critical stage in this process. We are drafting one such RFP currently, and intend that it be a template for (or at least help inform) extant and future CCA initiatives. Would your company be willing to review and provide comments during the drafting process? The draft would be publicly posted, and advertised for feedback from industry experts.

Yes. The opportunity for all interested parties to submit comments, as noted in the question, as well as taking other steps necessary to avoid a potential 1090 conflict of interest violation, if any, are critical to TEA's participation in this process.

Willingness to Engage in At-Risk and Performance Based Contracting

Would your company be willing to work at risk during the implementation of the CCA, similar to how the Redwood Coast Energy Authority structured their contract with The Energy Authority? These costs would be agreed to and paid back over a period of time after the successful launch of the program. This strategy, which distinguishes between three consecutive contract phases with different at-risk provisions, is described in detail on page 69-72 of the Business Plan, and incorporated into the financing strategy section on page 64. Additionally, please describe any services your company offers under specific performance-based fee structures (refer to 74-75 of the Business Plan), if any. Please offer any feedback that would enhance either contracting strategies.

As demonstrated by our commitment to RCEA and the City of Solana Beach, yes, TEA is willing to work in an 'at risk' framework similar to RCEA. (On May 24th, the City of Solana Beach City Council authorized the City Manager to enter into an agreement with TEA that is structured nearly identical to RCEA with respect to scope and at-risk fee structure.)

Due to the potential size and workload commitment that may be involved in serving a CCA or JPA of CCAs the size of South Bay Clean Power, TEA may want to explore with SBCP possible modifications to the risk-sharing structure deployed at RCEA. TEA would be willing to again put at risk recovering a portion of its consulting fees associated with developing the feasibility study (or similar) and other services performed prior to program launch. Depending upon the size of SBCP, however, TEA may seek sponsoring agency credit support (or other third-party credit backing) for a share of the credit requirements for initial power procurement.

In short, TEA is very open to discussing alternative structures that make sense for both TEA and South Bay.

Financing Strategy

Please refer to pages 64-66 of the Business Plan for our recommended financing strategy. Would your company be willing to produce financial projections for the CCA as part of the at-risk scope of work and — in coordination with local government staff — negotiate loans or other financial products (for execution by the SBCP JPA or JPA of CCAs, as applicable) for power financing and working capital requirements during the implementation process? Please briefly describe this process and timeline, and any advantages your company could offer in securing the requisite financing on favorable terms.

TEA is very willing to assist South Bay in exploring alternative financial structures, and in particular, the interrelationships between financing, portfolio management and procurement. The

financial and risk models that TEA would develop to perform portfolio management would likely play an integral role in this effort.

It may also be worth noting that TEA staff have a great depth of experience working with its clients in helping explain procurement and risk management strategies to credit rating agencies.

To fully consider all financing opportunities, and to compliment the expertise of an organization such as TEA, we recommend that SBCP also consider engaging a financial advisory organization to assist in the comprehensive exploration of alternative financial arrangements. A strong financial advisor can provide the expertise, experience and relationships throughout the financial industry to help SBCP understand the full spectrum of possible financing solutions (commercial banks, investment banks, private sources, etc.) that may be available from initial planning through implementation and operation. They can also help SBCP to eventually approach the major credit rating agencies (S&P, Moody's and Fitch), which will be a key step in establishing credit-worthiness and the ability to implement long-term resource procurement in a sustainable and cost-effective manner.

Transitioning Responsibilities to CCA Staff

Would your company be amenable to assisting the CCA in developing staff capacity, with training support and the managed transition of certain responsibilities from your company to CCA staff over the contract term? This is described in more detail on page 45-48 of the South Bay Clean Power Business Plan. Examples of this could include drafting sections of the CCA's Business Process Manual pertaining to your scope of services, offering fee levels that decrease as certain responsibilities are transitioned (or fee structures that can switch from managed services to software-as-a-service), education and training for new CCA staff, etc. Has your company provided this support to other clients? Please provide any feedback that would enhance this strategy.

Yes, TEA is open to assisting a CCA take on increasing levels of responsibility over time, including providing training and documentation of processes, and adjusting our fee as the scope of services changes. The specifics would need to be discussed during contract negations.

TEA encourages SBCP to reach out to RCEA and discuss their experience working with TEA and the training that we have been providing to staff. TEA aspires to have knowledgeable customers capable of making informed decisions with respect to activities in the wholesale markets. To that end, TEA has and can offer a variety of educational opportunities, from "Wholesale Markets 101" and "Risk Management 101" type seminars, to extended working visits to our offices to sit with and learn from the experts in all the areas where TEA provides services. TEA also offers opportunities for annual meetings with other customers and industry experts for networking and knowledge sharing. Another possibility once TEA has a critical mass of CCA customers is a version of our monthly all-day "JSOC" meetings which we hold for our Northwest customers to hear updates from staff as well as outside industry experts on the latest market and industry developments.

Overall, TEA believes that the table on page 47 of the SBCP Business Plan is a really good starting point for planning to launch a CCA and guide startup and outsourcing decisions. TEA has found that the most successful and durable business models are ones where the client (be it CCA or POU)

contracts with a trusted partner to provide the tactical operational services where unique skills/knowledge and/or greater economies of scale can be realized (e.g., data management and scheduling coordinator services) but the client retains control of all other functions, particularly strategic decisions.

Oftentimes partnering arrangements can also help create redundancy in staffing to help mitigate the risk of losing a key employee.

Specific to the table on page 47, TEA suggests South Bay consider assuming at least partial responsibility for the following functions even during implementation:

- Accounting and controls
- Marketing and outreach
- Key account management

These are areas which are generally outside of TEA's service offerings, although TEA is certainly willing to assist where it can be of help (for example in validating financials, or working with key large customers who may have wholesale energy needs).

South Bay will likely find that there is a fair bit of integration between budgeting, financial planning, rate setting and portfolio development and valuation functions. TEA typically works very closely with our clients in these areas, for example in developing strategies for meeting financial objectives and tracking financial metrics over time, in addition to developing portfolios to meet clients' objectives. This is not to imply that the table on page 47 should be updated.

Distributed Energy Resources

Does your company offer services that support the use of Distributed Energy Resources in planning, origination, contract management, operations and settlements (or other services)? Please describe any relevant experience and qualifications, prioritizing CAISO market activities. If not, describe how your company would expect to integrate its portfolio management services with a third-party hired to provide these DER services, and any relevant experience in this regard.

TEA can incorporate DER resources into planning, procurement and operations. For example, TEA currently assists the University of California to manage their cogeneration facilities in order to reduce their overall utility bill by providing a load forecast which they can then use to schedule their generation, and a platform to communicate those generation schedules back to TEA and then to the CAISO. To the extent these resources can participate in wholesale markets (individually or in aggregate), TEA can facilitate the active market integration of DER acting as the Scheduling Coordinator. Note that TEA is not involved on the retail side in terms of metering and aggregating distributed energy resources. As anticipated by the SBCP Plan, TEA would need to work with another service provider who provides those types of services. TEA can also model and value DER assets for origination/procurement, optimization in the market and to manage portfolio risk. Depending on the time horizon, TEA can do expected and scenario based evaluation (value and portfolio fit) of DER resources, or, for a shorter-term (<5 years) horizon TEA will evaluate assets' value and fit using internally-developed stochastic models which provide a range of values and

impact on the overall distribution of portfolio outcomes (i.e. how the asset impacts probability of having to raise rates above IOU's rates, or reserves falling below a particular threshold).

Regulatory and Market Intelligence

Please briefly describe the extent to which your company monitors, analyzes, and advises on extant and evolving legislative, regulatory and market policies, rules, procedures, et cetera (as applicable for CCAs). Does your company do so only for compliance purposes, or do you also engage on behalf of or advise clients on strategic opportunities for engagement in these forums? Please offer any additional comments regarding these services, as appropriate, in the context of the evolving legal and regulatory nature of the California CCA market.

At this time, TEA is actively monitoring procurement related compliance issues. With the launch of RCEA, we are in the process of ramping up our efforts to provide technical analysis and recommendations on PAM/PCIA and IRP proceedings.

Admittedly, we are working to determine how TEA best fits into the larger CCA regulatory and legislative monitoring and advocacy framework recognizing the work already being performed by CalCCA, the operating CCAs and the different legal and consulting firms already engaged.

As a general practice, TEA avoids taking an advocacy role in proceedings unless there is clear alignment on an issue among clients and potential clients and TEA's participation can offer a unique perspective. TEA prefers to provide technical analysis to its clients explaining the potential outcomes and tradeoffs of different measures and then let the client take the lead in advocating a particular position.

Additional Documentation

Please list any additional documentation attached to supplement your responses or provide details on your company and services.

This section describes related project experience with an emphasis on services to other Clients in California and WECC.

Pacific Northwest AC Intertie and CASIO Imports/Exports Clients:

Since January 2014, TEA has worked with four Northwest public utilities to jointly manage and optimize a 52 MW share of the AC Intertie connecting the Pacific Northwest and California. The scope of activities performed by TEA associated with this work includes:

- Development of trading strategies using both term, day-ahead and hourly markets
- Importing energy into CAISO, including preparing e-tags
- Managing congestion between Malin and NP15, including the use of CRRs

- Monitoring and procuring carbon allowance obligations under the California Air Resources Board's Cap-and-Trade Program
- CAISO settlement validation

Additionally, TEA continually seeks economic opportunities to import and/or export from CAISO on behalf of its other northwest Clients subject to availability of transmission.

Pacific Northwest Portfolio Management Clients:

Since October 2011, TEA has provided a full range of power and portfolio management services for the nine public utilities listed below:

1. Public Utility District No. 1 of Benton County, Washington
2. Public Utility District No. 1 of Franklin County, Washington
3. Public Utility District No. 1 of Grays Harbor County, Washington
4. Public Utility District No. 1 of Lewis County, Washington
5. Public Utility District No. 2 of Pacific County, Washington
6. Public Utility District No. 1 of Cowlitz County, Washington
7. Public Utility District No. 1 of Klickitat County, Washington
8. Public Utility District No. 1 of Clark County, Washington
9. Emerald People's Utility District, Eugene, Oregon

Specific activities currently performed for these utilities include the following:

- Portfolio management and optimization for the following resource types
  - 1,400 MW hydro
  - 400 MW wind
  - 375 MW natural gas-fired CCCT
  - Miscellaneous (cogen, small hydro, landfill gas)
- Hourly/Daily/Term trading and scheduling
- Marketing bundled "bucket 1 and 2" energy/REC transactions
- Development of short-term and long-term (1-3 years) operating strategies
- Contract negotiation and administration
- Portfolio risk management
- Facilitation of monthly risk management committee meetings
- Hedging recommendations and supporting analysis
- Market fundamental and technical analysis
- Risk reporting
- Cash Flow at Risk ("CFaR") modeling
- Counterparty credit evaluation and limit monitoring
- Month-end settlement
- Regulatory monitoring

- Dodd-Frank
- BPA rate and transmission rate cases and business practices
- California Air Resource Board
- Miscellaneous consulting (e.g., IRP, Dodd-Frank compliance, risk policy review, and maintenance)

As part of this effort, TEA is responsible for separately optimizing the systems of each Client, consistent with each organization's unique risk tolerances and objectives, while simultaneously seeking opportunities to work cooperatively and return higher benefits to each Client than could be achieved operating in isolation. TEA also seeks opportunities to capture "win-win" transaction opportunities between its Clients to improve the overall economics for both parties.

City of Roseville Long-term Risk Analysis:

TEA was hired by the City of Roseville, California to perform a long-term study on the impacts to its financial situation due to ongoing changes in the electricity industry from policy and regulatory changes, technological changes, and changes in consumer behavior. TEA developed a pro forma model of Roseville's cash flows with toggles to permit scenario analysis on load growth, RPS content of the portfolio, rooftop solar penetration, household electricity storage, and fixed versus volumetric retail rate structures. TEA also developed fifteen year price forecasts using a production cost model of WECC incorporating projected supply-stack developments such as the retirement of the once-through-cooling fleet in California, state-by-state renewable portfolio standards, and implementation of the Federal Clean Power Plan. The forecast model was then run for a variety of California-specific scenarios assuming alternative carbon prices, renewable portfolio standards, and interchange capabilities. The results of the forecasts were used to determine the impact of these scenarios on Roseville's long-term energy costs and revenues.

Balancing Authority of Northern California Business Model Analysis:

The Balancing Authority of Northern California ("BANC") hired TEA to perform an analysis evaluating various business model options for responding to the challenges of integrating variable energy resources (e.g., wind and solar) as RPS requirements increase through time. BANC consists of the Sacramento Municipal Utility District, the cities of Roseville and Redding, California, the Modesto Irrigation District, and the Trinity Public Utility District. The business models analyzed included: becoming part of CAISO's two-day market, joining CAISO's newer Energy Imbalance Market, forming a pooling agreement for BANC members and other California utilities, and joining a prospective Northwest Power Pool centralized economic dispatch market. The analysis evaluated the different alternatives based on a set of criteria that included the cost to join and implement, potential revenue growth, potential reductions in energy costs resulting from more efficient dispatch of resources and the impact on local control and decision making of alternative governance structures. Results of TEA's analysis were documented in a written report and presented to BANC's governing board.

Other Regional Transmission Operator (RTO) Market Qualifications and Experience:

TEA is an active participant in MISO, PJM and SPP markets and currently provides Market Participant services (similar to CAISO SC services) to 15 electric utilities across MISO, SPP and

PJM, representing over 10,000 MW of installed generation capacity and 10,300 MW of peak load. TEA's services in these eastern markets include:

- Providing the interface between the market systems and the utility
- Developing Day Ahead Market (DAM) Real Time Market (RTM) and Ancillary Services Market (ASM) bidding strategies
- Submitting DA Load Bids and both DA and RT Generation Offers
- Receiving DA and RT Awards
- Scheduling the awards with the utilities' control center operators
- Providing Congestion Revenue Rights (CRR) management and participating in the CRR auctions
- Providing Settlement Shadowing and invoice validation of the utilities' market business with the RTO
- Filing and managing Settlement Dispute Resolution if necessary
- Managing the utilities' Invoice/Payments with the RTO and providing credit management
- Reporting

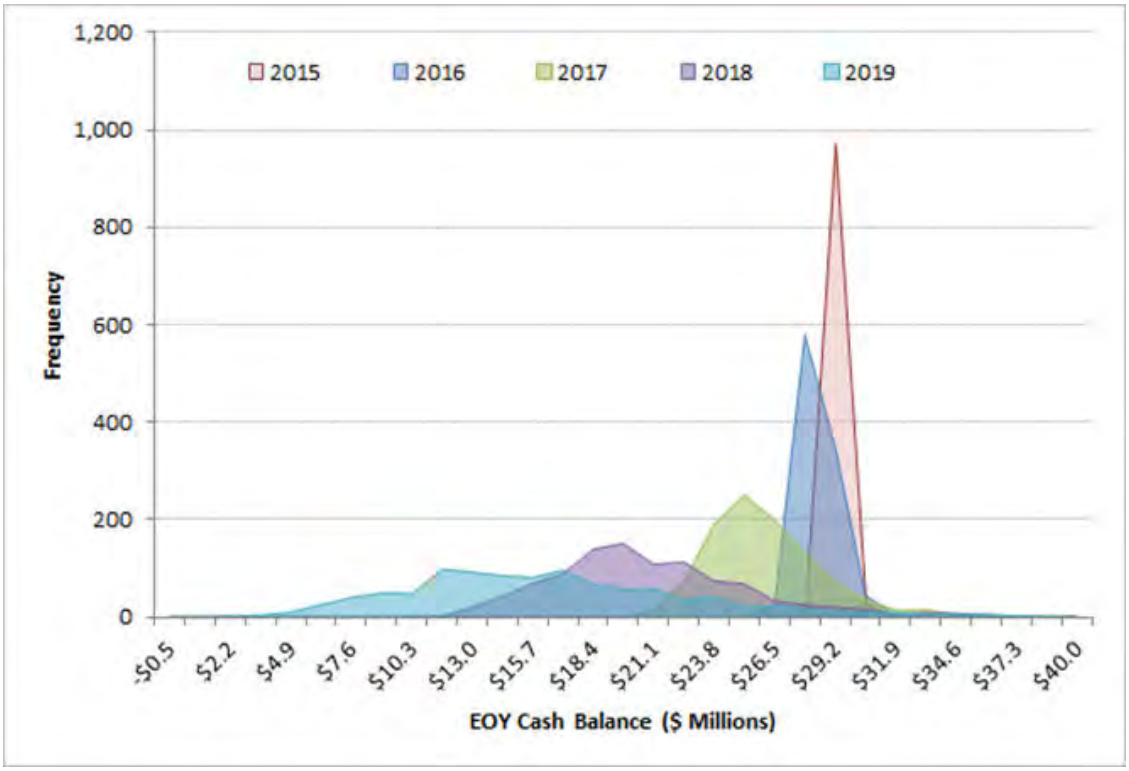
Other Planning, Procurement, Portfolio Management & Rates Management Clients:

TEA serves as the strategic advisor and primary interface on wholesale energy issues for over 20 community-chartered utilities and other wholesale market participants (e.g., universities, Native American tribes) of a wide range of sizes, resource mixes and regulatory regimes across the United States. TEA's primary focus is helping these organizations manage their wholesale supply portfolios to achieve their community-specific objectives – whether focused on costs and rates, environmental and sustainability goals, or a combination thereof. TEA provides comprehensive advisory services for planning, procurement, supply management, financial modeling, and risk management, to assist its clients develop and execute sound strategies. TEA has a large, highly talented analytics group which develops industry-leading stochastic and scenario-based models to understand and measure potential variability and stress case outcomes on each organization's finances. This helps each entity make supply and procurement decisions consistent with each community's unique goals, as well as develop strategies for rates and reserves, that ensure prudent and robust finances coupled with stable and competitive rates. In addition, TEA's experience includes formal development of Integrated Resource Plans ("IRP's") in fulfillment of prudent long-range planning and state regulatory requirements. To date, TEA has developed IRP's for 5 electric utilities.

Other Financial and Risk Modeling Clients:

TEA has developed and maintains pro forma models for two utilities in California and nine utilities in Washington and Oregon, which are automatically updated on a nightly basis with the latest forward gas and power prices for different trading hubs in the western United States, as well as for any transactions executed in the previous day. The pro forma models also form the foundation for monthly stochastic analyses to determine probability-based distributions of cash flows and the impacts on the distribution of power costs and revenues resulting from potential hedges and hypothetical supply additions. Many of TEA's clients also use these models for annual budgeting and other financial planning activities.

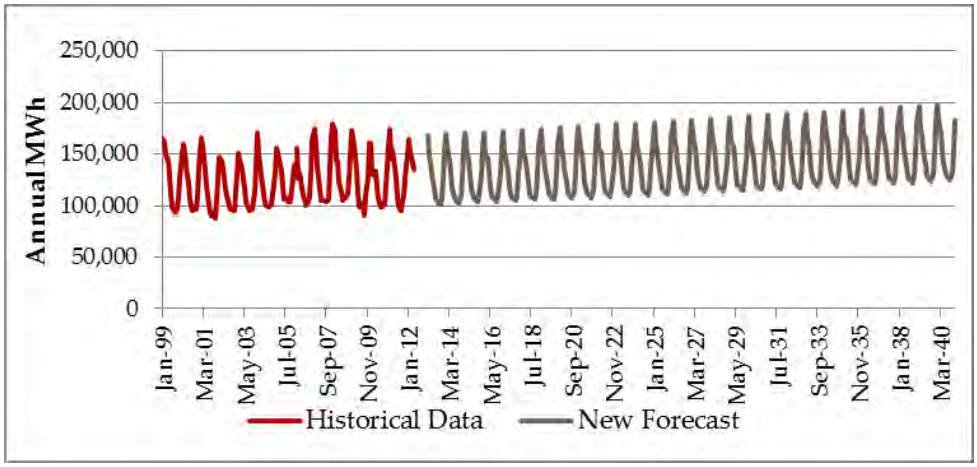
An example of simulated annual cash flow balance distributions is shown below:



Other Load Forecasting Clients:

TEA has substantial experience in the area of load forecasting and load simulation. TEA has created 12 long-term load forecasts for 7 utilities throughout the nation. TEA also forecasts hourly load on a short-term basis for 15 utilities and the University of California.

In addition to load forecasting, TEA performs stochastic load simulations for over 20 utilities on a 0-5 year time horizon to assist in supply planning, hedging, and budgeting processes. Finally, as part of the Roseville project described earlier, TEA performed a 15-year evaluation of unconventional risks that included simulations of load decline and load shape changes from rooftop solar and distributed battery storage. An example long-term econometric load (energy) forecast is shown below:



Other Short-term Load Forecast Model Clients:

TEA is currently providing short-term load forecasting services to 15 public utilities across the United States. TEA's standard short-term load forecast model consists of 24 separate linear regression-based models where each hour is modeled separately because different weather variables are significant at different times of the day. TEA often finds the following variables most influential and are included in the majority of its models:

- Temperature
- Heating Degree Day
- Cooling Degree Day
- Dew Point
- Humidity
- Day of the Week
- Federal Holiday

In certain instances, TEA has also found Client loads where the following variables may be significant: wind chill, heat index, wind speed, wind gust, precipitation, sunshine minutes, wet bulb index, percent cloud cover, month of year, yearly sin and cos functions.

Customized Energy Solutions

Company Overview

Please give a brief overview of your company, service offerings and relevant project or client qualifications for CCAs. Include whether your company provides services to public power entities, investor-owned utilities and energy service providers or companies (ESP/ ESCO) operating in competitive retail markets. Please include useful metrics such as energy and peak load under management in California or in other markets, years of experience, number of control centers, etc.

Established in 1998, Customized Energy Solutions, Ltd. (CES) is a privately owned corporation based in Philadelphia, PA. CES now has offices throughout the country and internationally. We began operations in California in 2006, and our CA Office is located at 101 Parkshore Drive, Folsom, CA, only minutes from the CAISO. In California, the CES team provides: CAISO Scheduling Coordinator services (for renewable generation, competitive load, proxy demand response (PDR) and energy storage), data acquisition/telemetry services, congestion hedging services, compliance services, energy storage technology, regulatory, and financial services, and market intelligence. CES is also a registered Demand Response Provider (DRP) and Distributed Energy Resource Provider (DERP) with the CAISO. CES is one of the first SCs to schedule/settle/dispatch an energy storage resource in the CAISO market and has years of experience scheduling various storage technologies in other ISO/RTOs.

CES has grown consistently over the past 15 years, with a current staff of over 100 people. CES has been recognized regionally and nationally for its impressive and sustained growth, with several awards, including: one of the "Best Places to Work" for several years running by the Philadelphia Business Journal, eight time Honoree on the INC. 500 | 5000 Honor Roll, and the 2016 winner of the Energy Storage Association's Brad Roberts Award for Outstanding Industry Achievement.

Qualifications

CES currently provides the following services in California:

- Full Scheduling Coordinator Services including bidding/scheduling into the Day Ahead and Real Time markets, dispatch services, and outage management for load, generation, PDR and energy storage.
- Telemetry services with a CAISO certified RIG, and the first to utilize CAISO's dispersive telemetry technology
- Portfolio management including forward procurement of energy, Resource Adequacy (RA) capacity and renewable attributes.
- Regulatory compliance including annual/monthly compliance filing preparation and submission.
- Congestion Revenue Right (CRR) optimization in both the annual and monthly CAISO CRR auctions.
- Settlement Validation and Reporting with specialized expertise in charge codes associated with renewables
- Energy storage services including technology and financial evaluation, as well as SC and data acquisition services
- Interconnection support

Scheduling in ISO/RTO Markets

- CES has maintained a 24-hour Market Operations Center and been scheduling facilities into various ISO/RTO markets since 2008.
- CES's 24-hour Market Operations Center (MOC) is fully staffed with ISO/RTO–certified, experienced employees.
- CES monitors plant status through our in-house Siemens Generation Management System, communicates plant status changes to the ISO, advises resource sites on dispatch to maximize revenue and minimize risk, and transmits telemetry information to the ISO using CES' proprietary ("Secure|Net") telemetry system. Our customized service adapts to site- specific requirements. In the event of a complete distribution system outage, we have two separate power feeds coming from separate distribution feeders and on-site generation feeds.
- CES provides Scheduling Coordinator services for a dispatchable wind facility in the CAISO markets under the Scheduling Coordinator ID GALT and we operate as a certified Scheduling Agent for a competitive Load Serving Entity (LSE) in California.
- CES is providing scheduling service which will include scheduling, dispatch and settlement services for a proxy demand service ("PDR") for multiple DRPs who were awarded capacity in the recent Demand Response Auction Mechanism (DRAM).

Settlement Validation, Disputes and Invoicing

- CES uses automated systems to download daily CAISO settlement files.
- CES performs shadow settlement calculations to assist with validation of daily/monthly settlement charge codes.
- CES prepares and submits settlement disputes, and works with the CAISO to resolve any disputes. CES provides weekly reports and has developed customized reporting to meet client needs.
- CES makes ISO and client specific settlement data available to clients through an online platform, CES|GOLD, allowing clients to run custom reports and export data.
- Our staff has direct experience working in the CAISO's Settlements department. CES is currently contracted with a large CA Investor Owned Utility (IOU) and Publicly Owned Utility to provide daily settlement validation, assist with the development of customized validation reports, provide feedback to the front office staff regarding the settlement impact of bidding strategies, and provide input on the CAISO settlement design change proposals.

Regulatory Filings

- As part of our comprehensive SC services, CES is able to complete and file all FERC, CEC, CPUC, and CAISO regulatory reports including, but not limited to Electronic Quarterly Reports (EQR), Energy Information Administration (EIA), Renewable Portfolio Standard (RPS) and Resource Adequacy (RA) compliance filings.

Renewables Management

- CES provides RPS management services in all active markets, including California as part of comprehensive suite of renewable services that includes Western Renewable Energy Generation Information System (WREGIS) Registration, Renewable Energy Credit procurement management, tracking, verification and compliance filings.
- CES follows RPS rule changes and developments, tracks REC pricing, and manages client RPS positions through our custom RPS Dashboard.

Data Acquisition

- CES provides a comprehensive suite of Data Acquisition Services in multiple ISO/RTO markets, including the CAISO We provide Real Time bi-directional telemetry to communicate MW, MVar, KV, MWH, MVarH, breaker and alarm status, dispatch signals for use by generation resources.

Energy storage

- CES provides storage-specific services including: interconnection, RFP, energy storage financial valuation, technology support, market rule and regulatory guidance, and market intelligence via its StorageIQ regulatory service.

Retail Services

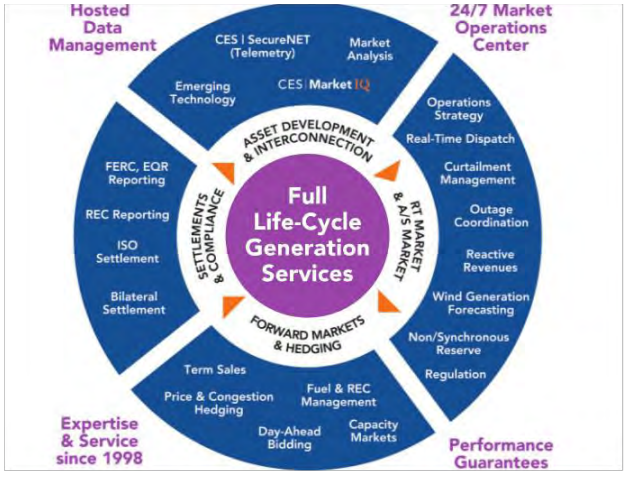
In addition, CES offers a suite of services to support the retail operations required for CCAs, including Electronic Data Interchange (EDI) services, customer account management, customer enrollment, billing (incl. taxes), payments, and load forecasting. Customer Call Center services can be provided as well through a third party.

RETAIL SERVICES

Enabling power and gas retailers' growth and profitability with end-to-end solutions through our state-of-the-art hosted software and service platform, CES | BLUE.

GENERATION SERVICES

Supporting the market entry and optimal operations of power generation with comprehensive hosted software and service solutions through CES | GOLD.



Benefits and Risks of Portfolio Manager Approach

Please compare the potential benefits for a CCA to launch using your services as a portfolio manager instead of the broker + ESP full requirements solicitation pathway. This is described in the South Bay Clean Power draft Business Plan (the "Business Plan") [7] ***on pages 2-4 and 17-19. Are there potential shortcomings or risks inherent in this approach, and if so, what mitigating strategies and processes would your company employ?***

A Portfolio Manager approach can provide benefits to a CCA over the brokered full requirements procurement. Most significantly for a CCA, a Portfolio Manager approach provides more autonomy and flexibility in establishing and achieving its desired goals through the establishment of the CCA. The Portfolio Manager approach provides the CCA, at inception, with a broad portfolio of expertise required to manage the myriad of obligations which the CCA takes on. Included in those capabilities are industry standard risk management practices, the ability to negotiate and enter into contracts for resources and suppliers to meet the immediate and long term needs of the CCA, financial instruments necessary to provide for the credit and working capital requirements, regulatory compliance expertise and full-scale energy management capabilities required to orchestrate the optimal operation of the CCA's resource and supply portfolio.

Under a Portfolio Manager approach the CCA would have considerably more discretion as to the make-up of its supply portfolio. The CCA through its selected Portfolio Manager is empowered to determine the resource mix, risk instruments used and supplier diversity subject to its established goals, objectives, and risk management policies. The advantages of this approach are numerous:

- Allows for diversification of the supply / performance risk across potentially many suppliers thereby minimizing the impact of any one supplier's failure to perform
- Allows construction of the supply portfolio based on risk management policy, risk tolerance, and prevailing market conditions considering such parameters as term length, instruments employed, resources directly owned/contracted, open position / market exposure
- Allows for selection of fuel / resource mix based on factors important to the CCA such as sustainability, GHG reduction/elimination, energy supply security and reliability, etc.

While offering benefits, the Portfolio Manager approach is not without risk:

- Firstly, it is significantly more complex, requiring a high level of understanding—not only to engage directly but also to manage a third party contracted to provide the Portfolio Manager services. This necessitates that the CCA's management have relevant power industry experience.
- Market price risk is projected directly onto the CCA to manage whereas often in a full requirements supply arrangement the pricing of all or large portions of the supply are fixed. However, effective implementation of the Portfolio Manager approach provides the CCA with the tools and expertise to mitigate—and potentially benefit from—this market price risk. A solid Portfolio Manager will provide transparency and accuracy in forecasting needs,

[7] Available online at [https://southbaycleanpower.files.wordpress.com/2017/02/sbcp_draft-business-plan_feb15_2017.pdf]

identifying the resource needs, identifying and quantifying the risks, and providing the optimal mix of resources, contracts, and risk management strategies and instruments to protect against adverse market price movements.

- Can require large amounts of collateral and working capital; under a full requirement supply arrangement collateral and working capital requirements are generally funded by the supplier and the carry cost is embedded in the supply rates for a more "pay as you go" arrangement. With a Portfolio Manager approach, the CCA can implement effective strategies to mitigate and minimize the collateral and working capital needs. Firstly, through initially contracting for at-risk work required to get the CCA up and running, upfront costs can be deferred. Secondly, through collateralizing the receivables from the CCA, working capital and collateral needs can be financed through third party credit provider(s).

The complex and ever changing regulatory requirements for CCAs in California require a portfolio manager at the outset that can assess risk exposure and manage contracts both long and shorter-term. Regulatory requirements include but are not limited to the following:

- Renewable Portfolio Standard (RPS) – CCA's are subject to the same procurement requirements and compliance rules as the Investor Owned Utilities (IOUs) which includes meeting the RPS goals (33% by 2020 and 50% by 2030) through long-term contracts, reporting requirements and potential penalties for non-compliance.
- Resource Adequacy (RA) – CCA's must procure capacity to meet RA obligations proportionate to their peak load share, procure capacity to meet flexible RA requirements and submit annual and monthly filings to the CPUC to demonstrate compliance.
- Integrated Resource Planning – As outlined in SB 350 (2015) CCA's will be required to submit integrated resource plans to the CPUC for certification. Plans must meet a number of requirements including state policy goals specific to greenhouse gas reduction and the RPS. If the CPUC finds that the CCA's renewable integration needs are best met through long-term procurement commitments for resources, CCA's are also required to make long-term commitments
- Potential change from the current Competitive Transition Charge (CTC) and Power Cost Indifference Adjustment (PCIA) to the IOUs' proposed Portfolio Allocation Methodology (PAM) to recover above market costs of utility procurement from departing load. While the CTC and PCIA are based on estimates of the extent to which the costs of legacy IOU procurement may exceed its current value, PAM would sidestep estimating the current value of IOU procurement by effectively assigning the benefits of IOU procurement, including RA capacity and renewable energy credits, directly to departing load. This could result in additional costs to CCAs that will have to be managed.

An important aspect of engaging in a Portfolio Manager approach is to establish goals and objectives of taking such approach and then defining risk management policies and procedures that support those goals. The CCA would with the help of the Portfolio Manager, define and prioritize goals and objectives in a number of areas including GHG emissions reductions, resource/fuel mix, price stability, time horizons, risk exposure, and consumer services. Only then can the plan be put in place to achieve the objectives of the CCA

CES would work with the CCA to establish risk policies and procedures that support its goals and objectives, defining a portfolio management strategy consistent with the goals and objectives and execute on the strategy while ensuring strict adherence to the risk policies.

Managing Risk: the PCIA and PAM Challenge

The Investor Owned Utilities proposed to replace the PCIA (Power Charge Indifference Adjustment Mechanism) with the PAM (Portfolio Allocation Mechanism). This proposal was formulated primarily by Southern California Edison during a series of PCIA workshops held with CCAs and other industry stakeholders. PAM is summarized on pages 107-109 of the Business Plan, and more recently updated and detailed in the IOU's joint filing A.17-04-__ (dated 25 April 2017 and available online here[8]) in CPUC Rulemaking 03-10-003. The PAM proposal is a specific area of regulatory uncertainty that will likely impact CCA portfolio management and costs in the near term. Please describe how your company could assist CCAs in structuring portfolios and managing risk in this context. Please also refer to "Enabling Coordination between Southern California Edison & Community Choice" on pages 9-10 of the Business Plan.

To the extent the proceeding yields access and transparency to the details of the IOU's generation portfolios (as contemplated in the joint filing), incorporation of the PAM into the CCA's portfolio should not be overly complicated. The allocated portion of the generation portfolio to the LSE (CCA) will be known volume and price for all components. The allocation can then be 'marked' to the current market prices to determine whether the allocation is in or out of the market and by how much. The mark could be hedged using a financial swap instrument or the position actively managed within the overall portfolio to optimize the value of the allocation. While the full requirements approach may provide effective risk mitigation of the PAM, the Portfolio Manager approach should ensure the risk management capabilities are in place at inception to manage the PAM risk and provide transparency into the risk, the measures employed and the results of the actions taken.

Data access and transparency as determined in the proceeding will be key in the ability and methods to mitigate the risk of the PAM.

Structuring Services for a Regional "JPA of CCAs"

South Bay Clean Power may issue the forthcoming RFP for its CCA, or join with other CCA initiatives to form a regional Joint Powers Agency "JPA of CCAs" to issue the RFP and provide services to all member CCAs. Please refer to pages 39-44 of the Business Plan for details. Is your company familiar with this governance structure, which is based on NCPA and SCPPA (JPAs of municipal utilities and irrigation districts in California)? Does your company have any experience in providing services to similar entities or groups? Please briefly describe how

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[8] Available online: [http://insideedison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/254/files/20173/PAM%20Joint%20IOU%20Application.pdf]

your company would maintain separate portfolios, settlements, etc. for each member CCA while facilitating joint planning and purchasing opportunities, etc. What are the inherent advantages or disadvantages in this approach versus having each individual CCA contract for services?

CES has direct experience working with municipal utilities, irrigation districts, as well as federal facilities in California. CES provides regulatory support for several of these entities, as well as settlements and market rule advisory services. For purposes of scheduling and settlements, CES through its affiliate, GALT, maintains separate portfolios for CAISO participation and utilizes separate CAISO resource IDs. CES/GALT is well-versed in this CAISO process, and has secure system, processes, and quality control in place to ensure portfolios and resources are treated independently.

If joint planning and purchasing were to proceed for a "JPA of CCAs", CES would work with the members to ensure a clear and efficient process is established to schedule, and allocate the settlements according to the agreed-upon division.

Benefits of a JPA of CCAs could include economies of scale for staffing and procurement costs. However, the downside would be the creation of a much larger more utility-like structure which would have to be weighed against the advantages of a smaller, nimbler CCA acting on its own.

Initial Portfolio Strategy, Modeling and Origination

Please describe the process by which your company would assist a CCA in structuring its power portfolio prior to launch and during the initial period of operations. In your opinion, would this decrease or enhance local control for a CCA in terms of transparency, price, flexibility and risk management in selecting power sources to serve their community? Would this decrease or enhance the ability of the CCA to contract for and integrate new renewable and local distributed energy resources while managing risk? Why or why not?

As discussed above, it is vital to establish the primary objective of the supply portfolio management and the risk policies to support before defining the strategy, as the strategy must support the objective and fit within the risk policy. Accordingly, the first step on the process would be to establish the objectives and risk policies.

The Portfolio Management approach, however, should enhance local control for a CCA in terms of transparency and flexibility in selecting power sources to serve the community, as the CCA (through its Portfolio Manager agent) will have direct visibility into and discretion into the selection of and contracting with those resources. It is difficult to assess whether price competitiveness will be enhanced or decreased as there are a number of factors that could impact pricing including location, the nature of the desired resources, market efficiency, and volume. A well regarded, credit-worthy market participant should be able to transact in the market at competitive pricing.

The ability to integrate new renewable and local DER will be dependent on the objectives and associated procurement strategy as discussed above. At the outset the CCA will likely employ a combination of bilateral supply contracts and PPAs to meet its supply requirements. A layered portfolio of varying term contracts is a standard practice to provide for price stability over time.

The time horizons for ensuring price stability will dictate the make-up of such a portfolio. Long term integrated planning should then consider the roll off of bilateral contracts and plan for potential replacement with directly owned / contracted resources.

Willingness to Inform RFP Design & Contracting Process

Contracting for portfolio management services is a relatively new development for CCAs, and the design of the Request for Proposals is a critical stage in this process. We are drafting one such RFP currently, and intend that it be a template for (or at least help inform) extant and future CCA initiatives. Would your company be willing to review and provide comments during the drafting process? The draft would be publicly posted, and advertised for feedback from industry experts.

CES would review and provide comments as appropriate.

Willingness to Engage in At-Risk and Performance Based Contracting

Would your company be willing to work at risk during the implementation of the CCA, similar to how the Redwood Coast Energy Authority structured their contract with The Energy Authority? These costs would be agreed to and paid back over a period of time after the successful launch of the program. This strategy, which distinguishes between three consecutive contract phases with different at-risk provisions, is described in detail on page 69-72 of the Business Plan, and incorporated into the financing strategy section on page 64. Additionally, please describe any services your company offers under specific performance-based fee structures (refer to 74-75 of the Business Plan), if any. Please offer any feedback that would enhance either contracting strategies.

CES often does and will consider at-risk contracting with little to no up-front costs. CES' view and objective is to enter long term relationships and enable the long-term success of our clients. To that end, CES does perform at-risk work in exchange for sharing in the longer-term success of our clients. CES will consider at-risk work with CCAs. CES' retail market service offerings include performance based fee structures.

Financing Strategy

Please refer to pages 64-66 of the Business Plan for our recommended financing strategy. Would your company be willing to produce financial projections for the CCA as part of the at-risk scope of work and — in coordination with local government staff — negotiate loans or other financial products (for execution by the SBCP JPA or JPA of CCAs, as applicable) for power financing and working capital requirements during the implementation process? Please briefly describe this process and timeline, and any advantages your company could offer in securing the requisite financing on favorable terms.

CES could support development of financial projections that could be used in support of negotiating financing arrangements. CES has and could facilitate credit arrangements which

provide credit collateral and working capital financing through collateralization of the receivables for the CCA.

Transitioning Responsibilities to CCA Staff

Would your company be amenable to assisting the CCA in developing staff capacity, with training support and the managed transition of certain responsibilities from your company to CCA staff over the contract term? This is described in more detail on page 45-48 of the South Bay Clean Power Business Plan. Examples of this could include drafting sections of the CCA's Business Process Manual pertaining to your scope of services, offering fee levels that decrease as certain responsibilities are transitioned (or fee structures that can switch from managed services to software-as-a-service), education and training for new CCA staff, etc. Has your company provided this support to other clients? Please provide any feedback that would enhance this strategy.

CES aims to provide ongoing services and support to its clients over the long term. Many of CES offerings are "Software as a Service" (SAS) and "Business Process Outsourcing" (BPO) in strong coordination with clients—more an extension of the clients' staff rather than an outsourced solution. Our SAS platforms are provided with a high level of support, training and coordination with our clients. This approach supports transitioning over time to internal staff while maintaining the software as a service. Certain of the functions of the CCA which sensibly should be transitioned to CCA direct staff over time include customer operations functions such as account maintenance, billing, and customer service (management of third party call center). CES provides a hosted platform, CES|BLUE, on which these functions are supported. Additionally, financial management and strategic planning should migrate to internal staff. Origination, structuring, execution and market operations are areas that would more sensibly remain with the Portfolio Manager as they are highly specialized, industry specific and could more cost effectively carried out by an organization with the breadth and depth to leverage the expertise and market presence.

Note that, regarding page 47 of the Business Plan: the transition timeline for the Energy Management Functions—depending the division in "Joint Responsibility"—appears aggressive and could be counter-productive to contractors' willingness to work at-risk during implementation.

Distributed Energy Resources

Does your company offer services that support the use of Distributed Energy Resources in planning, origination, contract management, operations and settlements (or other services)? Please describe any relevant experience and qualifications, prioritizing CAISO market activities. If not, describe how your company would expect to integrate its portfolio management services with a third-party hired to provide these DER services, and any relevant experience in this regard.

CES is a leader in the provision of DER services in California, as well as throughout the country and internationally. CES's affiliate, GALT, is a certified CAISO Distributed Energy Resource Provider

(DERP). In fact, CES is a leader in the CAISO stakeholder processes to motivate the new rules that were created to enable creation of the DERP. CES provided the early telemetry pilot at the CAISO to allow for data concentration, thus enabling approval of the ICCP communication protocol for distributed resources.

CES/GALT is also a registered DRP at the CAISO and currently provides SC and compliance services for PDR in multiple service territories. CES is the first SC to be the CAISO DRP for residential load aggregation, and has worked directly with the CAISO staff to create new approaches for residential load meter data submittal.

CES / GALT currently schedules a distributed-level in front-of the meter advanced energy storage resource, and is therefore has first-hand experience in implementing energy storage technology at the CAISO, including the approval and certifications required for new technologies within the New Resource Interconnection Process (NRI), as well as certifying for the provision of Regulation ancillary services.

CES is now leading the charge to integrate a microgrid into the CAISO wholesale market. CES is currently working with Lawrence Berkeley National Labs (LBNL) at the Fort Hunter Ligger (FHL) Microgrid to create wholesale revenue opportunities. This involves an in-depth evaluation of solar and storage, including consideration of both wholesale and retail rate implications. CES will also integrate communications and control equipment necessary for market participation, as well as provide interconnection support and SC services. CES's efforts at FHL consider cyber security, zero net energy, resiliency and islanding abilities.

CES has extensive experience evaluating distributed renewable and storage resources, and utilizes CES|CoMETS (**C**ompetitive **M**arket **E**valuation **T**ools for **S**torage) for planning of renewable and storage integration. CoMETS takes into consideration the renewable generation profile, load profile, retail electricity tariff, peak demand charges, potential revenue from demand response programs and/or sales of ancillary services in determining the optimal size and operation strategy of the distributed resources. CES integrates its in-depth knowledge of the market rules, as well as its proprietary market price forecasts. CoMETS also performs multidimensional sensitivity analysis and scenario analysis to address uncertainties.

Regulatory and Market Intelligence

Please briefly describe the extent to which your company monitors, analyzes, and advises on extant and evolving legislative, regulatory and market policies, rules, procedures, et cetera (as applicable for CCAs). Does your company do so only for compliance purposes, or do you also engage on behalf of or advise clients on strategic opportunities for engagement in these forums? Please offer any additional comments regarding these services, as appropriate, in the context of the evolving legal and regulatory nature of the California CCA market.

CES has been advising its clients on market rule and regulatory changes in CA for over ten years and has advised clients on strategic opportunities to ensure our clients are engaged in topics that may impact their business. With an established client base, CES is well-known for offering comprehensive CAISO and CPUC coverage via its MarketIQ and StorageIQ services. The products include succinct and informative reports on specific stakeholder meetings, as well as CES expert

staff availability for answering questions or delving into topics of interest. CES also offers tailored market overviews and training services for their clients.

The CA team includes subject matter experts who have lead stakeholder initiatives for the CAISO, as well as have worked in leadership roles in the CA electric power industry for over 20 years. CES, with direct experience in the competitive load arena, follows and advises on topics that are pertinent to the CCA customer. CES's experts have in-depth knowledge of the RA market rules, energy storage, demand response, CRRs, renewable integration, regional expansion, transmission planning, integrated resource planning (IRP), credit and settlements.

Additional Documentation

Please list any additional documentation attached to supplement your responses or provide details on your company and services.


Ascend
Analytics

Company Overview

Please give a brief overview of your company, service offerings and relevant project or client qualifications for CCAs. Include whether your company provides services to public power entities, investor-owned utilities and energy service providers or companies (ESP/ ESCO) operating in competitive retail markets. Please include useful metrics such as energy and peak load under management in California or in other markets, years of experience, number of control centers, etc.

Ascend Analytics has been providing analytics software solutions and consulting services to the electric power industry since 2002. Large utilities, merchant generators, retail electricity providers, and publicly owned municipal utilities across the US rely on our advanced analytics tools and expertise to manage their portfolio risk and maximize market opportunities. Ascend's clients range from large utilities with over 50 GW of capacity in multiple markets, to municipal utilities with 200 MW in CAISO. Some of Ascend's California clients include: SCPPA, Turlock Irrigation District, Redding Electric, City of Riverside, SMUD, and LADWP.

Ascend Analytics offers a Software as Service (SaaS) model whereby users license software products and receive extensive training and consulting support. Ultimately Ascend wants to empower our customers to perform their own risk-based decision analysis, but until that time Ascend experts are available to perform analysis on their behalf. Ascend's consultants leverage our decsion analysis platform PowerSimm. PowerSimm is an integrated suite of software applications that support risk-based decision analysis from real-time and day-ahead operational decisions, to intermediate-term portfolio management decisions (next month – next 36 months), to the planning horizon (next 30 years). Ascend is unique in its ability to integrate physical components of renewables and load with the financial dimensions of prices, optimal hedging strategy, retail pricing, and real-time procurement operations.

Ascend understands SBCP seeks a fully integrated front, middle, and back office operation. Ascend's partner American Power Exchange (APX) is an industry leader in implementing market operations. Together, we form a team that can provide CCAs a comprehensive solution for procurement operations, management, and planning.

Benefits and Risks of Portfolio Manager Approach

Please compare the potential benefits for a CCA to launch using your services as a portfolio manager instead of the broker + ESP full requirements solicitation pathway. This is described in the South Bay Clean Power draft Business Plan (the "Business Plan") [9] ***on pages 2-4 and 17-19. Are there potential shortcomings or risks inherent in this approach, and if so, what mitigating strategies and processes would your company employ?***

The energy landscape is undergoing massive change driven by the rapid deployment of renewable resources. With increased renewable generation resulting in greater market price volatility, and

[9] Available online at [https://southbaycleanpower.files.wordpress.com/2017/02/sbcp_draft-business-plan_feb15_2017.pdf]

uncertainty growing, CCAs face additional risk to uncertainty in weather impacting both load and renewables and market prices. Understanding the extent of physical and financial risk becomes central to managing an energy supply portfolio with stable electric rates.

Managing energy portfolios in an uncertain environment requires the use of the best tools and expertise to capture physical and financial uncertainty. That is where Ascend comes in. **We can empower SBCP to confidently build and manage power supply portfolios that reduce emissions, promote clean local distributed energy resources, and manage risk effectively.**

CCAs are ultimately responsible for procuring power and assuring inflows of revenue to pay for the power and establish a strong credit rating. Ascend can partner with SBCP to quickly establish a robust portfolio management and procurement operation, so that SBCP can establish credit worthiness and a strong balance sheet as soon as possible.

Ascend would provide CCAs with the premier portfolio management analytic software and support, bringing them the same high-power analytics and best-in-class risk management processes used by the largest utilities in the country to address decision analysis needs from the next hour to the next thirty years.

Managing Risk: the PCIA and PAM Challenge

The Investor Owned Utilities proposed to replace the PCIA (Power Charge Indifference Adjustment Mechanism) with the PAM (Portfolio Allocation Mechanism). This proposal was formulated primarily by Southern California Edison during a series of PCIA workshops held with CCAs and other industry stakeholders. PAM is summarized on pages 107-109 of the Business Plan, and more recently updated and detailed in the IOU's joint filing A.17-04-__ (dated 25 April 2017 and available online here[10]) in CPUC Rulemaking 03-10-003. The PAM proposal is a specific area of regulatory uncertainty that will likely impact CCA portfolio management and costs in the near term. Please describe how your company could assist CCAs in structuring portfolios and managing risk in this context. Please also refer to "Enabling Coordination between Southern California Edison & Community Choice" on pages 9-10 of the Business Plan.

Managing uncertainty is a key strength of Ascend Analytics. Our simulation-based approach enables clients to make the best decision across all possible futures. Ascend would work with the CCAs to define possible outcomes and systematically incorporate this uncertainty into the portfolio management and planning process.

The first step would be to capture the fundamental drivers that affect the calculation of PCIA, PAM or whatever cost allocation mechanisms are ultimately adopted. Ascend's PowerSimm portfolio manager would be programmed to forecast the indifference charge. The necessary data on the utilities' portfolio can be estimated based on regulatory filings and other disclosures, and

[10] Available online: [http://insideedison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/254/files/20173/PAM%20Joint%20IOU%20Application.pdf]

additional data may be available under confidentiality in future (as offered by the IOUs under the PAM proposal). We would then simulate hundreds of possible outcomes and choose a hedging strategy that is optimal across all possible futures to construct an "all-weather" portfolio.

We agree that mirroring SCE's capabilities will make the transition of energy contracts much easier. It would be important to collaboratively strike fair and reasonable agreements with SCE with respect to now above-market renewables projects previously procured on behalf of to-be SBCP customers. Ascend's valuation expertise will be essential in these negotiations.

Structuring Services for a Regional "JPA of CCAs"

South Bay Clean Power may issue the forthcoming RFP for its CCA, or join with other CCA initiatives to form a regional Joint Powers Agency "JPA of CCAs" to issue the RFP and provide services to all member CCAs. Please refer to pages 39-44 of the Business Plan for details. Is your company familiar with this governance structure, which is based on NCPA and SCPPA (JPAs of municipal utilities and irrigation districts in California)? Does your company have any experience in providing services to similar entities or groups? Please briefly describe how your company would maintain separate portfolios, settlements, etc. for each member CCA while facilitating joint planning and purchasing opportunities, etc. What are the inherent advantages or disadvantages in this approach versus having each individual CCA contract for services?

Ascend provides the Southern California Public Power Association (SCPPA) with portfolio management and resource planning services. Ascend set up a common analytic framework between utilities' portfolios, while still maintaining separate portfolios for each SCPPA member based on the local context, constraints, needs and aims of each utility. Ascend would leverage this experience in its support of a JPA of CCAs.

A JPA would enable CCAs to reap the benefits of economies of scale. For example, CCAs would be able to sign larger power purchase agreements or invest in larger scale plants that lower the average costs for all CCA members. SBCP would also benefit from having to hire fewer employees than having multiple procurement shops. Finding procurement expertise is difficult and much more expensive that average municipal salaries. The only challenge of a JPA of CCAs is that it would require more up-front coordination and negotiations between cities to form such a joint entity.

Another advantage of combining CCAs to a JPA is the ability to perform coordinated integrated resources plans in compliance with SB 350. SB 350 requires IRPs to be filed with the CPUC outlining procurement plans to meet at least 50% RPS, meeting GHG emissions targets, and maintaining grid reliability all while keeping rates as low as possible. Planning in this fashion doesn't make sense in a balkanized landscape with lots of small load serving entities, especially to meet the State's aggressive policy goals that require large scale programs in renewables, efficiency, and transportation electrification.

Initial Portfolio Strategy, Modeling and Origination

Please describe the process by which your company would assist a CCA in structuring its power portfolio prior to launch and during the initial period of operations. In your opinion, would this decrease or enhance local control for a CCA in terms of transparency, price, flexibility and risk management in selecting power sources to serve their community? Would this decrease or enhance the ability of the CCA to contract for and integrate new renewable and local distributed energy resources while managing risk? Why or why not?

Ascend would assist a CCA in acquiring a mixture of economic options of generation available on the market, as well as asset-backed power purchases from clean energy. Ascend can generalize from its work with other municipalities in California and beyond that local energy would carry a premium over other forms of generation because of local energy's customer preference, reduced transmission congestion costs (i.e. basis risk), and the ability to more easily match generation to load.

As noted in the Business Plan, significant negotiations with SCE would need to occur to transfer existing power contracts to SBCP control. Ascend would provide the analysis to appropriately value existing contracts as a basis for negotiations. Our power management contractor partner would lead these negotiations as a team effort with Ascend and SBCP. This strategy enhances local control in as much as SBCP takes an active role in negotiations with SCE.

Next, we would use our portfolio management tools to determine the optimal strategy for market operations, such as open position and hedging instruments, subject to SBCP's goals for renewable procurement. In the early operations of the CCA, the first priority is to manage risk effectively. Over time, SBCP would be able to execute on its local and renewable goals in conjunction with its increasing maturity as a market participant. A demonstrated track record of prudent risk-based decision making is the most important ingredient in developing and integrating local renewable projects in the long run.

Willingness to Inform RFP Design & Contracting Process

Contracting for portfolio management services is a relatively new development for CCAs, and the design of the Request for Proposals is a critical stage in this process. We are drafting one such RFP currently, and intend that it be a template for (or at least help inform) extant and future CCA initiatives. Would your company be willing to review and provide comments during the drafting process? The draft would be publicly posted, and advertised for feedback from industry experts.

Yes, Ascend would be very interested in bringing its expertise and practices in portfolio and risk management to inform a process for crafting RFPs.

Willingness to Engage in At-Risk and Performance Based Contracting

Would your company be willing to work at risk during the implementation of the CCA, similar to how the Redwood Coast Energy Authority structured their contract with The Energy Authority? These costs would be agreed to and paid back over a period of time after the successful launch of the program. This strategy, which distinguishes between three consecutive contract phases with different at-risk provisions, is described in detail on page 69-72 of the Business Plan, and incorporated into the financing strategy section on page 64. Additionally, please describe any services your company offers under specific performance-based fee structures (refer to 74-75 of the Business Plan), if any. Please offer any feedback that would enhance either contracting strategies.

Yes, Ascend would be willing to do at-risk contracting. Ascend can carry implementation costs during the first-year startup period to be repaid over initial contract term (~3-5 years), with amount and interest negotiated up-front.

Financing Strategy

Please refer to pages 64-66 of the Business Plan for our recommended financing strategy. Would your company be willing to produce financial projections for the CCA as part of the at-risk scope of work and — in coordination with local government staff — negotiate loans or other financial products (for execution by the SBCP JPA or JPA of CCAs, as applicable) for power financing and working capital requirements during the implementation process? Please briefly describe this process and timeline, and any advantages your company could offer in securing the requisite financing on favorable terms.

Yes, Ascend would be able to provide credible financial projections in order to work with the finance community during the implementation process. Ascend has performed numerous independent economic analyses in support of the debt community providing over $5 billion in power-related financing.

Ascend is unique in its ability to incorporate and monetize risk into financial projections and to identify financial strategies to hedge against risk. To do this, we characterize major revenue risks such as customer opt-out rate as a function of rate competitiveness with the incumbent utility, as well as commodity price risk such as gas price and basis risk (LMP costs versus trading hub price). Our simulation approach allows us to calculate the "risk premium", which would be a basis for negotiated financing options.

Transitioning Responsibilities to CCA Staff

Would your company be amenable to assisting the CCA in developing staff capacity, with training support and the managed transition of certain responsibilities from your company to CCA staff over the contract term? This is described in more detail on page 45-48 of the South Bay Clean Power Business Plan. Examples of this could include drafting sections of the CCA's Business Process Manual pertaining to your scope of services, offering fee levels that decrease as certain responsibilities are transitioned (or fee structures that can switch from managed services to software-as-a-service), education and training for new CCA staff,

etc. Has your company provided this support to other clients? Please provide any feedback that would enhance this strategy.

Yes. Ascend's consulting service team has been responsible for starting up a half-dozen power supply operations as well as improving the business processes for existing customers. The launch efforts include development of the business and analytic infrastructure for ConEdison Solutions, Duke Solutions, Entergy Solutions, PPL and TEA, in addition to providing critical portfolio management services to dozens of retail providers and utilities.

Ascend would structure an engagement in which we set up SBCP with PowerSimm portfolio manager and train SBCP staff in how to use the software to perform risk-based decision making. At first, Ascend will set up a team with our partner APX, work on-site for six months to one year to set up the Business Process Manual and perform the portfolio management and operations activities. At such time Ascend will assist SBCP to recruit and hire staff with the expertise to take over these activities. Over the course of 12 – 24 months, Ascend/APX would phase out while SBCP staff take over responsibilities. Ascend's software license agreement structure means SBCP always has the support it needs to use our software.

Distributed Energy Resources

Does your company offer services that support the use of Distributed Energy Resources in planning, origination, contract management, operations and settlements (or other services)? Please describe any relevant experience and qualifications, prioritizing CAISO market activities. If not, describe how your company would expect to integrate its portfolio management services with a third-party hired to provide these DER services, and any relevant experience in this regard.

Ascend evaluates the value of DER technologies such as rooftop solar, electric vehicles, demand response, energy efficiency, and batteries along-side traditional supply side resources in a cost-effective and balanced future resource portfolio. DER resources are different from supply-side resources in that customer preferences, DER company marketing, and retail rate economics tend to be the driving forces for adoption. Utility supply planning then tends to become an exercise in trying to predict customer adoption of these technologies and understanding how they affect grid operations and wholesale procurement. In our planning, we take natural adoption rates of DERs as inputs to the capacity expansion optimization as they affect load and net load. We also specify DER programs as candidate resources by characterizing the suite of resource costs and benefits. For example, we can value and optimize battery systems in specific grid locations through the pancaking of multiple value streams such as renewable firming and shifting, deferral value, demand charge reduction, and grid services like regulation and energy arbitrage. All DER resources are evaluated in relationship to each other to capture natural synergies such as rooftop solar and storage or electric vehicles.

Ascend is not a distribution grid planner, and does not perform analytics on locational net benefits of DERs or feeder/circuit level hosting capacity. Ascend would likely work with other vendors in the DER space to fully integrate DER benefits and costs into supply optimization. For example, another vendor would evaluate where in SBCP's territory distribution grid in SBCP territory it makes the most sense to host DERs to maximize value and minimize grid upgrade requirements.

Then we could target these cost-effective DER penetrations through incentive programs and account for them in our wholesale supply planning.

Regulatory and Market Intelligence

Please briefly describe the extent to which your company monitors, analyzes, and advises on extant and evolving legislative, regulatory and market policies, rules, procedures, et cetera (as applicable for CCAs). Does your company do so only for compliance purposes, or do you also engage on behalf of or advise clients on strategic opportunities for engagement in these forums? Please offer any additional comments regarding these services, as appropriate, in the context of the evolving legal and regulatory nature of the California CCA market.

Ascend is not a policy or regulatory advisor. Nevertheless, we monitor energy policy and regulations in in California to assist our clients with SB-350 compliance in their long-term planning process.

Additional Documentation

Please list any additional documentation attached to supplement your responses or provide details on your company and services.

Please refer to the attached brochure; Ascend appreciates this opportunity to provide comments and we look forward to working with SBCP in the near future!

Ascend Analytics

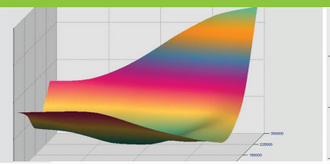
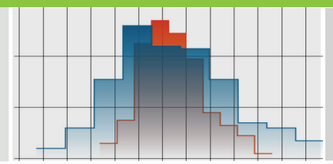
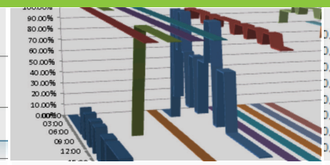
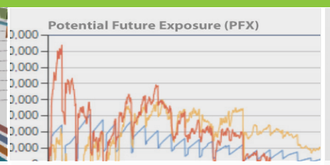
Elevating Risk Analytics

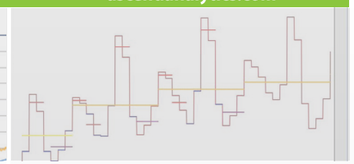
Better Models, Better Decisions

In an industry where uncertainty and risk impact every decision, Ascend Analytics software solutions provide the deepest and clearest evaluation of your portfolio and the market in motion. Getting it right means incorporating all of your physical & financial components of risk into a robust analytical process. Our software solutions deliver insights that help maximize value and minimize exposure of your portfolio.

The Ascend suite is the energy industry's leading analytic platform for enterprise ready solutions across the entire time frame of decision analysis – from the next hour to the next decade and beyond.

Ascend Analytics Suite:



Software Solutions for the Energy Industry

While energy markets have changed, most analytic models have remained rooted in the past. Ancillary services, renewable generation, price volatility and open markets have increased the complexity of energy portfolio analysis.

Physical and Financial Modeling

For over a decade, Ascend Analytics has been delivering the leading energy analytics platform for Portfolio Management, Risk Analytics and Resource Planning. Portfolios that include both physical and financial assets require more comprehensive analytic models. Utilizing detailed generation dispatch and robust simulations for weather, load, spot and forward prices, our models provide the analytic tools to dynamically balance portfolio positions. The complexity of energy markets and energy portfolios demand the advanced simulation techniques that Ascend's product suite provides.

Integrated Analytics Suite

The Ascend Analytics suite provides models to manage crucial decisions from within a single technology platform. From price curves, to generation dispatch, portfolio optimization, asset valuation and credit risk management, our models automate data integration and analytic processes to provide robust decision support across the enterprise.

Time Frame of Decision Analysis

Energy companies make portfolio optimization decisions across different time frames. Operations makes decisions for the next hour and day. Portfolio Management makes decisions for the next 5 years. Planning makes decisions for the next thirty years and beyond. The Ascend suite provides a single integrated analytics platform to assist decision making across the entire time spectrum.

PowerSimm Portfolio Manager

Intermediate term portfolio and risk analysis

Features:

- Thermal, renewable, hydro, storage asset modeling
- Weather, load, price simulation by hour or sub hour
- Integration of renewable generation
- Hedge optimization
- Risk measures such as GMaR, CFaR, CaR and VaR

Benefits:

- Physical and financial portfolio modeled
- Automated data acquisition from ETRM and other systems
- Valuation of deals, contracts and portfolios
- Scenario or simulation based analytics
- Scalable & secure platform
- Automated reporting

Used for:

- Hedge Design
- Cash flow & budget analysis
- Asset optimization
- Transaction valuation
- Portfolio optimization
- Risk reporting

PowerSimm Planner

Long term resource planning and capacity expansion

Features:

- Least cost, least risk resource planning
- Automated selection of optimal resources
- Renewable generation integration
- Evaluation of DSM, DG, EE programs
- Risk reduction value of portfolio options

Benefits:

- Scenario or simulation based analytics
- Hourly dispatch across the study horizon
- Dispatch to load, price and hybrid functions
- Hourly weather, load, price simulation
- Captures the full value of assets and contracts

Used for:

- Asset Valuation
- Integrated resource planning (IRP)
- Capacity expansion
- Transmission analysis
- Earnings analysis
- Rate case support

PowerSimm OPS

Next hour to balance of month generation & bid optimization

Features:

- Generation dispatch optimization
- Captures complex unit characteristics & market interactions
- Incremental & decremental costs/unit
- Sub-hourly modeling of dispatch
- Strategic bidding and transaction management

Benefits:

- Timely and accurate operational decisions
- Ancillary service values
- Revenue analysis from multiple market/price options
- Easily accessible data in custom reports for RT/DA traders and planners

Used for:

- Operational decisions for unit dispatch & bidding
- Identify trade opportunities to minimize costs or maximize revenues
- Fuel nominations
- Defensive shield for post decision analysis

Credit Manager

Enhanced credit exposure and potential future exposure analysis

Features:

- Robust simulations of forward & spot prices
- Exposure from both company and counterparty view
- Measures exposure from trading & collateral
- Captures master agreement details & netting rules
- Manages trader limits by commodity & trade type
- Potential future exposure

Benefits:

- Easy to use credit management tool
- Complete model for measuring credit risks
- Automation of data exchange with upstream and downstream systems
- Custom reporting tools

Used for:

- Managing counterparty exposure
- Understanding collateral requirements
- Developing strategies for trading and risk
- Informing senior management of exposure risks

Curve Developer

Market data warehouse and price curve generation

Features:

- Data capture from brokers, exchanges, vendors, ISOs
- Data scrubbing using statistical tests
- Automated curve generation using client-specific business rules
- Price curve analytic tools
- Volatility & correlations

Benefits:

- Manage more market data sources and free up staff time
- Custom curve generation by commodity, market and season
- Automation of client's processes in a secure environment
- Secure storage & scalable environment
- Automates FAS 157 compliance

Used for:

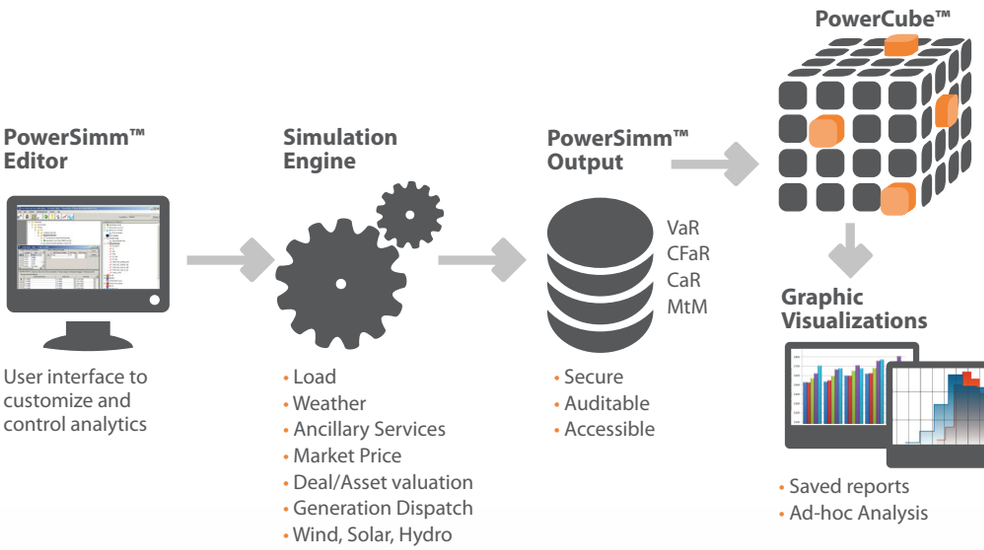
- Auditor approved MTW curves
- Individualized market curves for front, middle or back office.
- Sarbanes-Oxley compliance and FASB reporting
- Seamless interaction with deal capture, ETRM, and other analytic platforms

Leading Technology, Powerful Analytics

Ascend Analytics software delivers enterprise ready, scalable, production models which can be quickly deployed and integrated with other existing software. Ascend leverages the latest advances in software and computing technology to deliver powerful simulation models that capture the full range of portfolio exposures and options.

Open Code Analytics

Ascend Analytics software utilizes open code analytics to deliver maximum flexibility to our clients. Our integrated Job Management systems allow users to include proprietary analytic models into the process flow. Clients can also change or add analytic variables to meet their specific needs. The Ascend software delivers maximum flexibility inside of a powerful and secure production environment.



Rapid Deployment

Due to its modular nature, Ascend Analytics software can be rapidly deployed. Ascend's dedicated deployment team will provide a turn-key solution, minimizing impacts to your staff.

Hosting Solutions

Ascend Analytics can either deploy to client sites or host the software. Ascend offers a robust hosted environment with dedicated hardware, complete database and software support. Ascend can typically provide more efficient IT and software support, because that's what we do every day!

Client Support

Ascend Analytics provides the highest level of customer support in the energy industry. Ascend's dedicated service team allows clients to access experienced energy analysts and system experts directly. Leverage our analysts as peaking resources for your team.

Interested in more information?

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ACES

Company Overview

Please give a brief overview of your company, service offerings and relevant project or client qualifications for CCAs. Include whether your company provides services to public power entities, investor-owned utilities and energy service providers or companies (ESP/ ESCO) operating in competitive retail markets. Please include useful metrics such as energy and peak load under management in California or in other markets, years of experience, number of control centers, etc.

ACES Overview

Alliance for Cooperative Energy Services Power Marketing LLC (ACES) is an industry leader in providing customized energy risk management services utilizing economies of scale based on an established infrastructure of systems, processes, and people. ACES tailors the management of each Client's portfolio based on guidelines established by the Client in conjunction with ACES' knowledgeable staff.

With demonstrated operational expertise serving public power Clients in California, qualified staff, infrastructure capacity, and an as-agent business model, ACES is uniquely positioned to provide CCAs with wholesale energy and risk management services, as well as expertise and training to support growing CCA staff.

ACES is owned by public power entities and fosters the development of public power by providing support and services. The following information highlights ACES' experience, expertise, and value to Clients:

Extensive Client Portfolios

- ACES is owned by 22 Cooperative Utilities (Members) and serves an additional 50 Customers that operate in all NERC regions; ACES refers to its Members and Customers collectively as Clients;
- ACES operates in nearly all ISOs and traditional markets in the United States;
- Collectively, ACES manages over 50,000 MW of peak load, 50,000 MW of peak generation capacity, and approximately 3 Bcf of natural gas for fuel supply on peak generation days on behalf of its Clients;
- Renewable Portfolio Specialization:
    - ACES manages approximately 5,000 MW of renewable generation across the country;
    - ACES is experienced in managing wind, solar, biomass, landfill, large and small hydro facilities, and geothermal generation;
    - ACES has developed a high level of expertise managing renewable generation and has acquired extensive operational expertise associated with managing conventional generation assets.

Participatory Client Engagement and Risk Management Process

- ACES' approach to transaction execution and risk management is a participatory process with the objective of creating value, energy supply savings, and increasing local control for CCAs, rather than for ACES;
- ACES' unique approach to providing third-party energy risk management services distinctly separates it from the traditional energy merchant trading companies and investor-owned utilities and their affiliates;
- ACES has developed comprehensive energy trading and controls processes and procedures.

Analytical Capabilities

- ACES has extensive analytical expertise in resource planning and support, including modeling load-serving entity portfolios and analyzing the value of generation resources and power purchase agreements (PPA) within portfolios;
- ACES analyses include: portfolio risk modeling, transmission and congestion modeling, hedge strategy development, and execution strategy development.

Alignment of Goals Through "As Agent" Structure

- ACES acts as agent for CCAs and does not manage its own trading book: all services provided are focused on maximizing the value and minimizing the liabilities of the CCA's portfolios;
- ACES' agency role allows for proper alignment of the CCA's and ACES' business objectives;
- ACES assists CCAs in establishing a robust trading control environment to support trading functions;
- ACES can provide contract administration services to enable CCAs to trade directly with counterparties.

Business Continuity

- ACES' infrastructure allows for redundant connectivity between its regional trading centers (RTC), near real-time transaction based replication, and remote connectivity to applications via the internet;
- ACES utilizes backup generation at each of its RTCs to ensure there will never be an interruption in its operations, and has a business continuity plan that is regularly tested.

ACES is a Registered Commodity Trading Advisor (CTA)

- ACES provides tailored advice focusing on a CCA's particular commodity interest account, commodity interest trading activity, or other similar types of information.

NERC Certification

- ACES' traders and managers involved in real-time operations are encouraged to maintain NERC certification.
- ACES' goal of requiring NERC certification for the real-time operations team is to ensure they understand the reliability implications related to the economic dispatch recommendations and decisions we make on behalf of our Clients.

California Experience

Since 2005, ACES has worked with public power Clients in California to improve their power supply portfolio management by providing the necessary information to make important decisions.

Consequently, ACES has developed significant expertise in the California markets and maintains strong relationships with CAISO and many active counterparties in the CAISO and WECC regions. ACES has an accomplished track record for providing operational, planning, management, and compliance services (wholesale energy and risk management services) in California.

ACES currently provides these wholesale energy and risk management services to six public power entities in the CAISO market, with aggregate portfolios of over 1,200 MW of demand and 950 MW of generation:

1. City of Glendale, CA
2. City of Palo Alto, CA
3. City of Pasadena, CA
4. City of Roseville, CA
5. Power & Water Resources Pooling Authority
6. Arizona Electric Power Cooperative

In addition to the California portfolios ACES currently manages, ACES provides consulting services to other Clients in California, including municipal power utilities, irrigation districts, renewable developers, and other industry participants.

ACES is active in day-to-day CAISO activities, long-term strategy development, and settlements. The following are examples of these activities:

- Scheduling Coordinator (SC) Services as Agent
- Long-Term Strategy Development
- Short-Term Strategy Development (less than one month)
- Congestion Revenue Rights (CRR) Optimization and Management
- Day-Ahead Power Trading, Operations, and Portfolio Optimization
- Day-Ahead E-tag and CAISO Schedule Management
- Real-Time Power Trading, Operations, and Portfolio Optimization
- Real-Time E-tag and CAISO Schedule Management
- Outage Management System (OMS) and Automated Dispatch System (ADS) Management and Monitoring
- Transaction Authority Policy Development and Maintenance
- Load Forecasting
- Short-Term Transaction and Scheduling Services

- Scheduling and Bidding in CAISO and WECC
- System Monitoring and Logging
- Resource Adequacy Management
- Short-Term Generation Optimization
- Portfolio Modeling
- Price Desk Services
- Origination Services
- CAISO Regulatory Services
- Credit Services
- Contract Administration Services
- Mark-to-Market Services
- CAISO and Bilateral Settlements

In summary, ACES' capabilities will provide new CCAs with proven 'best in class' energy risk management capabilities, comparable to California's Investor Owned Utilities in terms of structure and expertise.

Benefits and Risks of Portfolio Manager Approach

Please compare the potential benefits for a CCA to launch using your services as a portfolio manager instead of the broker + ESP full requirements solicitation pathway. This is described in the South Bay Clean Power draft Business Plan (the "Business Plan")[11] on pages 2-4 and 17-19. Are there potential shortcomings or risks inherent in this approach, and if so, what mitigating strategies and processes would your company employ?

Contracting with ACES as portfolio manager provides numerous energy risk management benefits to CCAs, particularly better risk management in planning and procurement, and active risk management capabilities in 24/7 market operations. In turn, this facilitates the knowledge-transfer and staff training necessary for the SBCP CCA to develop its own internal expertise.

Risk Management in Planning

ACES uses advanced software and market data to forecast and structure our Client's power portfolios, minimize price risk, and manage costs. ACES has been successful in completing these tasks on behalf of large public power Clients in California since 2005.

[11] Available online at [https://southbaycleanpower.files.wordpress.com/2017/02/sbcp_draft-business-plan_feb15_2017.pdf]

Historically, CCA forecasts, which are used to negotiate financing, procure initial power for launch and phase-in periods, and procure long-term power contracts, have relied upon customized models that produce single-point estimates (referred to as deterministic models).

These are typically spreadsheet models, and the inputs are manually varied to produce results under a number of scenarios. This type of deterministic model is subject to potentially significant "model error" risk, and provides limited quantitative insight into the range of a CCA's real-world performance because of two primary factors:

- Complex spreadsheets models are subject to errors in methodology and user-input — particularly if the model's calculations have not been fully audited by third-parties and proven under a variety of market conditions.
- Actual energy requirements, power costs, and the CCA's resulting financial performance are subject to real-world variability because of various 'moving target' factors.

In this regard, ACES would provide a higher level of service in terms of applying data-driven, quantitative risk management best practices in forecasting. Advantages that ACES offers in this regard include:

1. Rigorous 'stress testing' of the CCAs anticipated range of portfolio performance using specialized software. ACES relies upon proven software, widely-used and tested by utilities and sophisticated energy market participants, to forecast the performance of its Clients under thousands of potential market scenarios. This software provides both single-point estimates and probability distributions to capture real-world variability that the CCA will face. This minimizes "model error" risk and is an industry best practice, both in public power and more broadly in commodity energy risk management.
2. Reliance on 'real world' operational data. ACES has been a market participant in California since 2005, actively transacting on behalf of our public power Clients. Our forecasts are therefore informed by databases of historic market transactions, load and weather data, forward power and gas curve price data, and active monitoring of bilateral market transactions occurring in California in real-time.
3. Our proven ability to optimize the selection of our Client's power portfolio and provide active (24/7) risk-management services during market operations (to monitor and manage risks and by doing so, minimize costs and exposure).

Risk Management in Procurement

CCAs that do not utilize a portfolio manager have historically procured almost all required power from a single supplier at launch. While this simplifies the initial procurement solicitation, it concentrates counterparty default risk in a single supplier. Particularly for a CCA the size of SBCP, this may not an ideal structure.

ACES would be able to source power from multiple suppliers and directly from power plants, diversifying the portfolio and spreading default risk across multiple counterparties. ACES routinely structures portfolios for its Clients in California in this manner, and SBCP can benefit from this economy of scale and standard practice by hiring a portfolio manager. In doing so, ACES has more flexibility to seek lower cost pricing and execute a number of specific transactions that, in aggregate, provide a comparably fixed-price portfolio. Unlike an energy supplier, ACES does not make any margin on the CCA's portfolio and is only paid for providing these services.

This approach also has the added benefit of allowing more flexibility in contracting for local renewable and distributed resources, since ACES and SBCP staff can structure the portfolio around these solicitations and resources. Lastly, this flexible portfolio approach would allow SBCP greater ability to manage PCIA/PAM price risks year-to-year, as the portfolio would be structured continuously around these cost drivers (which move inversely to market prices).

Active Risk Management in Market Operations:

ACES maintains real-time operation centers that allow it to actively monitor the market, and implement risk management strategies in accordance with its Client's adopted policies.

Historically, CCAs in California have not deployed these capabilities; instead, CCAs have purchased shaped or block power from an Energy Service Company. This supplier has no incentive to monitor or minimize costs for the CCA. The CCA is therefore financially exposed to various 'real world' risks, without any corresponding ability to track or manage those risks.

For example, the CCA must pay the difference between the volume of power the CCA contracted for originally and the CCA's actual usage during that hour (matched against the market prices in that hour). This is referred to as "imbalance risk," and is highly dependent on weather. Compounding this risk is the fact that the forecasts originally used to procure these volumes of power may or may not have adhered to industry-standard methodologies (this is a component of the "model risk" described in the previous section). For a CCA relying primarily on a single supplier, these costs are simply charged to the CCA on a pass-through basis.

In contrast, ACES would actively monitor market conditions, track the SBCP CCA's financial exposure, engage in continuous procurement, and execute various mitigating strategies in accordance with adopted risk management policies and practices.

Accelerating SBCP CCA Staff Training

In hiring ACES to provide a full suite of energy risk management services, the SBCP CCA would launch with a comprehensive set of operations and procedures in place. As detailed under our response to the "Transitioning Responsibilities to CCA Staff" question below, ACES offers robust online and in-person training for CCA staff in order to transition responsibilities, as appropriate.

In hiring ACES, the SBCP CCA does not have to choose between deploying 'best in class' risk management capabilities versus developing staff expertise itself as a public power agency (and deploying increasingly-sophisticated capabilities over time). ACES actively provides both services, implementing the overall structure and the training resources to ensure a smooth transition.

Managing Risk: the PCIA and PAM Challenge

The Investor Owned Utilities proposed to replace the PCIA (Power Charge Indifference Adjustment Mechanism) with the PAM (Portfolio Allocation Mechanism). This proposal was formulated primarily by Southern California Edison during a series of PCIA workshops held with CCAs and other industry stakeholders. PAM is summarized on pages 107-109 of the Business Plan, and more recently updated and detailed in the IOU's joint filing A.17-04-__

(dated 25 April 2017 and available online here[12]) in CPUC Rulemaking 03-10-003. The PAM proposal is a specific area of regulatory uncertainty that will likely impact CCA portfolio management and costs in the near term. Please describe how your company could assist CCAs in structuring portfolios and managing risk in this context. Please also refer to "Enabling Coordination between Southern California Edison & Community Choice" on pages 9-10 of the Business Plan.

The CCAs operating in California today have objected to the uncertainty over PCIA price increases, which are set annually in proceedings at the CPUC. As PCIA costs have increased in recent years, so have the objections of CCAs. These are non-bypassable charges that are assigned directly to and collected from the CCAs customers, who are therefore exposed to price risks that CCAs are not predicting.

In essence, both the existing PCIA mechanism and proposed PAM mechanism are part of the total energy cost. Under either mechanism, the cost for these charges moves in inverse relation to wholesale market costs (i.e., if market prices go up on average, the PCIA goes down, and vice-versa). The reason is that certain utility power contracts are eligible for cost recovery from all customers, regardless of whether the customer is under a CCA, an Energy Service Company, or the utility (on bundled service). If the customer is served by the utility, the cost of these contracts is included in their generation rates. If a customer is served by a CCA, these costs are broken out and assigned under a separate line item on the customer's bill.

ACES would manage this risk, as well as other risks, by creating a customized Portfolio Model. The primary goal of the Portfolio Model is to assist with strategically determining hedges to meet the CCA's risk tolerance. The key model output is an estimate of the expected variable cost to serve native load accompanied by a statistical measure of potential variation (risk) in the average variable cost. To forecast the PCIA or PAM, data on the applicable utility power contracts would be input into the model. Necessary inputs may be approximated based on data disclosed in utility regulatory filings, contracts, and advice letters. Additional, more granular data may eventually be incorporated under the PAM mechanism (which is expected to revise confidentiality and non-disclosure provisions for CCAs to increase transparency).

The model results quantify the expected cost and risk inherent for any portfolio in any period. The model results help determine the CCA's hedge strategy commensurate with its risk tolerance. While many models, including the ACES Portfolio Model, provide a single point estimate of costs, prices, fuel needs, etc., the ACES Portfolio Model also provides Clients with a detailed probability distribution of possible results. The ACES Portfolio Model quantifies a firm's exposure to the following:

- Power prices
- Customer opt-out rates
- PCIA/PAM charges

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[12] Available online: [http://insideedison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/254/files/20173/PAM%20Joint%20IOU%20Application.pdf]

- Renewable portfolio standards
- Native load and long-term sales obligations
- Incremental transactions and hedging activities
- Generation outages and de-rates
- Emissions

In summary, ACES would regularly forecast PCIA or PAM costs and appropriately structure the CCA's choice of power contracts to minimize price risk and volatility for its customers — using industry-standard software models, methodologies, and data sources comparable to the Investor Owned Utilities.

Structuring Services for a Regional "JPA of CCAs"

South Bay Clean Power may issue the forthcoming RFP for its CCA, or join with other CCA initiatives to form a regional Joint Powers Agency "JPA of CCAs" to issue the RFP and provide services to all member CCAs. Please refer to pages 39-44 of the Business Plan for details. Is your company familiar with this governance structure, which is based on NCPA and SCPPA (JPAs of municipal utilities and irrigation districts in California)? Does your company have any experience in providing services to similar entities or groups? Please briefly describe how your company would maintain separate portfolios, settlements, etc. for each member CCA while facilitating joint planning and purchasing opportunities, etc. What are the inherent advantages or disadvantages in this approach versus having each individual CCA contract for services?

ACES is familiar with managing single entity (municipal utility) and multiple entity (agency) portfolios. ACES provides services to individual public power entities nationwide. ACES also provides services to 22 electric cooperatives, whose portfolios include the aggregate power supply for their distribution member cooperatives, and also provides services to other entities with aggregated power supply portfolios across the country. In essence, ACES itself is a working example of this model. Our founding cooperatives pooled their resources to create ACES, in order to provide expert services at a lower overall cost to each individual Member. All Clients of ACES subsequently receive these benefits.

No matter the governance structure of the entity, ACES' goal is to help our Clients meet their portfolio goals and be involved in the decision-making process. ACES avoids all conflicts of interest by not having any position in the market, and manages each portfolio based on the goals and guidelines set by the Client.

Under this model, it is also important to implement and monitor the separation of duties for managing individual CCA portfolios at the staff level (i.e., internal to ACES). Because of this, ACES places separate subject matter experts (SME) to manage the front office operations for each CCA. Each SME applies tailored risk management and portfolio strategies that are in the best interests of their assigned CCA.

CCAs can achieve economies of scale through joint planning and purchasing through this model. Individual CCAs need to find the right balance of local control and risk tolerance, and may have different objectives in terms of renewable content, customer rates, and other metrics. In order to

increase transparency and provide more decision-making power, ACES can model individual CCAs' power supply portfolios separately. ACES can then aggregate the model results for each CCA and procure the power supply needs for the entire JPA of CCAs, utilizing the larger economies of scale. ACES also tracks and apportions the resulting costs from power transactions between the individual CCAs, as appropriate.

Regarding long-term planning and contracting (e.g., building new renewable resources), ACES can coordinate similar exercises for all CCAs in the region. Doing so is likely to reveal optimization opportunities, which will be increasingly important to maintaining a competitive position relative to the Investor Owned Utilities, as California's RPS targets grow steadily each year. This model would provide that economy of scale, as well as the formal processes to routinely manage coordination between individual CCAs in long-term contracting decisions.

Initial Portfolio Strategy, Modeling and Origination

Please describe the process by which your company would assist a CCA in structuring its power portfolio prior to launch and during the initial period of operations. In your opinion, would this decrease or enhance local control for a CCA in terms of transparency, price, flexibility and risk management in selecting power sources to serve their community? Would this decrease or enhance the ability of the CCA to contract for and integrate new renewable and local distributed energy resources while managing risk? Why or why not?

ACES' can help CCAs launch, maintain competitive prices with Investor-Owned Utilities (IOU), increase local control, comply with policies, and meet goals. ACES provides services to retail service providers and municipal utilities with similar portfolio goals and structures, and can recommend multiple strategies and service offerings to implement CCAs and help them evolve over time.

Broadly, ACES would provide the SBCP CCA with the following services during this implementation phase:

- Advise on or draft applicable governance policies (such as the Energy Risk Management Policy);
- Develop energy and financial forecasts that identify cash flow and capital needs for a sustainable CCA;
  - Determine the CCA's portfolio goals and requirements;
  - Forecast and incorporate the price risk of PCIA/PAM (utility non-bypassable charges);
  - Build customized portfolio model(s) to determine and measure market risks to the CCA.
- Complete the CCA registration process and prepare for participation in wholesale energy markets:
  - Complete IOU registration and certification (with the CCA's assistance as required);
  - Implement the CCA in compliance with CPUC regulations;
  - Enable the CCA to execute transactions directly with counterparties (avoiding power marketing premiums);

- Register the CCA as a scheduling coordinator with the CAISO, with ACES as the designated agent.

- Develop the CCA's power supply portfolio and help manage risks in the portfolio by completing the following:
  - Solicit the wholesale energy market to determine the best options to meet power supply needs;
  - Utilize the CCA portfolio model to value and contrast contracts under a variety of future conditions, in order to optimize the portfolio to best achieve CCA policy goals (balancing renewable content, price risk, and other factors);
  - Execute contracts to fulfill power supply needs.
- Provide a reliable trading and scheduling environment, supporting 24/7 operations and business continuity as operations commence.

ACES' process for launching a CCA and implementing initial operations increases price transparency through modeling, allows customized policy goals to be considered, and provides more local control by both including the CCA in the decision-making process and advising staff and officials on relevant market dynamics and considerations in their choice of power contracts.

For further details on ACES' approach to modeling, procurement, and operations, please refer to our response under the "Benefits and Risks of Portfolio Manager Approach" question.

Willingness to Inform RFP Design & Contracting Process

Contracting for portfolio management services is a relatively new development for CCAs, and the design of the Request for Proposals is a critical stage in this process. We are drafting one such RFP currently, and intend that it be a template for (or at least help inform) extant and future CCA initiatives. Would your company be willing to review and provide comments during the drafting process? The draft would be publicly posted, and advertised for feedback from industry experts.

ACES would review the RFP for services and provide feedback, provided that this is a transparent, public process as described above.

Willingness to Engage in At-Risk and Performance Based Contracting

Would your company be willing to work at risk during the implementation of the CCA, similar to how the Redwood Coast Energy Authority structured their contract with The Energy Authority? These costs would be agreed to and paid back over a period of time after the successful launch of the program. This strategy, which distinguishes between three consecutive contract phases with different at-risk provisions, is described in detail on page 69-72 of the Business Plan, and incorporated into the financing strategy section on page 64. Additionally, please describe any services your company offers under specific performance-based fee structures (refer to 74-75 of the Business Plan), if any. Please offer any feedback that would enhance either contracting strategies.

ACES prefers to receive compensation when services are provided; however, ACES is open to discussing alternatives.

Client fees are determined by requesting time estimates from each department involved in managing the Client's portfolio. ACES does not use a standard package price for services. ACES has worked with a number of Clients to provide partial services when ACES' complete suite of services is not required. Because of this, it is important for new CCAs to clearly communicate the technical scope of work being requested, and also provide sufficient background material to allow ACES to develop an appropriate understanding of the CCA's structure, anticipated contracting process, and overall goals. The SBCP Plan meets these criteria.

ACES is flexible and can quickly adapt its service offerings to fit the needs of the CCA through its customizable approach. During operations, the CCA would pay ACES a fixed monthly fee for services, and the CCA would retain all portfolio performance revenue.

Financing Strategy

Please refer to pages 64-66 of the Business Plan for our recommended financing strategy. Would your company be willing to produce financial projections for the CCA as part of the at-risk scope of work and — in coordination with local government staff — negotiate loans or other financial products (for execution by the SBCP JPA or JPA of CCAs, as applicable) for power financing and working capital requirements during the implementation process? Please briefly describe this process and timeline, and any advantages your company could offer in securing the requisite financing on favorable terms.

Negotiating financing for new CCAs broadly consists of two distinct tasks. The first is producing energy and financial forecasts of the CCA's performance. ACES is well-suited for this task. The second is negotiating and structuring the financing agreements. Depending on the governance structure used by the CCA, there are various California-specific legal requirements to consider in negotiating financing. This scope of work would likely rely on more specialized expertise that is outside of ACES' core focus as an energy portfolio manager. It may enhance the solicitation process overall if this were broken out as a separate scope of work under the SBCP RFP for services.

ACES would actively support this contractor by recommending phase-in strategies, forecasting portfolio costs for the CCA and providing experts to explain model results to prospective financiers over the course of the negotiations. These are tasks appropriately assigned to the CCA's portfolio manager, and which are necessary to support financial negotiations.

Please refer to our response under "Benefits and Risks of Portfolio Manager Approach." Our response details how ACES' forecasts adhere to various industry-standard practices. This is a higher-level of rigor as compared to the forecasts used by other CCAs to date to negotiate financing, and is anticipated to facilitate SBCP's negotiations.

Transitioning Responsibilities to CCA Staff

Would your company be amenable to assisting the CCA in developing staff capacity, with training support and the managed transition of certain responsibilities from your company to CCA staff over the contract term? This is described in more detail on page 45-48 of the South Bay Clean Power Business Plan. Examples of this could include drafting sections of the CCA's Business Process Manual pertaining to your scope of services, offering fee levels that decrease as certain responsibilities are transitioned (or fee structures that can switch from managed services to software-as-a-service), education and training for new CCA staff, etc. Has your company provided this support to other clients? Please provide any feedback that would enhance this strategy.

Building internal staff capacity is an important requirement for newly-formed CCAs in California. ACES is very supportive of these initiatives. Our existing clients and member-owners often request training, and ACES has consequently developed a variety of online and in-person training resources and services to support job specific staff functions upon request. ACES also provides high-level market training to Board Members to help them make more informed decisions. The training is customized based on the CCA's needs.

Some of ACES' services can be transferred to the CCA over time as staff are hired and trained. In this case, ACES can perform services on a temporary basis until the CCA has hired internal staff. ACES can assist with training the CCA staff, then transition the services to the CCA to support a smooth transition of these responsibilities. Our fee structure would be tailored to reflect this transition (i.e. decreasing as appropriate).

Distributed Energy Resources

Does your company offer services that support the use of Distributed Energy Resources in planning, origination, contract management, operations and settlements (or other services)? Please describe any relevant experience and qualifications, prioritizing CAISO market activities. If not, describe how your company would expect to integrate its portfolio management services with a third-party hired to provide these DER services, and any relevant experience in this regard.

ACES provides the necessary capabilities for its Clients to integrate local demand response and distributed energy resources into planning and active operations, but does not design DER programs or policies.

One example of this is Great River Energy (GRE), a G&T cooperative that is a founding Member and co-owner of ACES. GRE is located in the Mid-West and procures substantial amounts of wind power. They have designed and deployed various distributed energy programs for electric vehicle charging, energy efficiency, and demand response. Their demand response programs control over 165,000 electric water heaters, which are managed to shift electricity usage to targeted off-peak hours and as a 'virtual battery' to store wind power at night. Air conditioning units are also targeted for demand response, though GRE additionally incentivizes the installation of more efficient air source heat pumps instead of new air conditioning units.

To ensure that these sorts of DER initiatives provide a positive business case for a Client (such as the SBCP CCA), ACES would provide quantitative analytics into the CCA's energy usage patterns

and wholesale power portfolio cost-drivers. This data would be necessary when CCA staff or specialized contractors are designing DER programs.

As DER programs are deployed, and assets such as demand response are brought on line, ACES can provide its Clients with the price and dispatch signals required to actively use DER resources for effective integration into active market operations.

ACES then incorporates the forecasted growth and impact of DER programs into its short- and long-term power planning exercises to ensure that these resources are treated and valued properly as a component of the Client's power portfolio.

Regulatory and Market Intelligence

Please briefly describe the extent to which your company monitors, analyzes, and advises on extant and evolving legislative, regulatory and market policies, rules, procedures, et cetera (as applicable for CCAs). Does your company do so only for compliance purposes, or do you also engage on behalf of or advise clients on strategic opportunities for engagement in these forums? Please offer any additional comments regarding these services, as appropriate, in the context of the evolving legal and regulatory nature of the California CCA market.

ACES provides regulatory services, market intelligence reports, and compliance services to ensure the CCA is in compliance with all regulatory requirements, such as renewable portfolio standard (RPS), resource adequacy (RA), energy storage implementation, and re-certification of implementation plans.

As a wholesale market agent on behalf of our Clients in California since 2005, ACES regularly participates in WECC and CAISO regulatory meetings that pertain to the services being provided. Results of the meeting and market changes will be reported to the CCA. ACES will develop and implement necessary strategies to meet any new regulatory requirements.

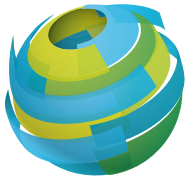
ACES does not currently provide legal or legislative engagement services, such as testifying in proceedings or following legislative changes. ACES monitors changes in the wholesale energy markets and implements proper strategies to accommodate these changes. However, ACES does not represent our Client's before the State Legislature. ACES can work with vendors that provide these services to the CCA to ensure that the CCA's engagement adequately incorporates technical and operational considerations.

Additional Documentation

Please list any additional documentation attached to supplement your responses or provide details on your company and services.

Please refer to the attached brochure; and for additional information about ACES, please visit www.acespower.com

ACES
Company Brochure



ACES®
excellence in energy

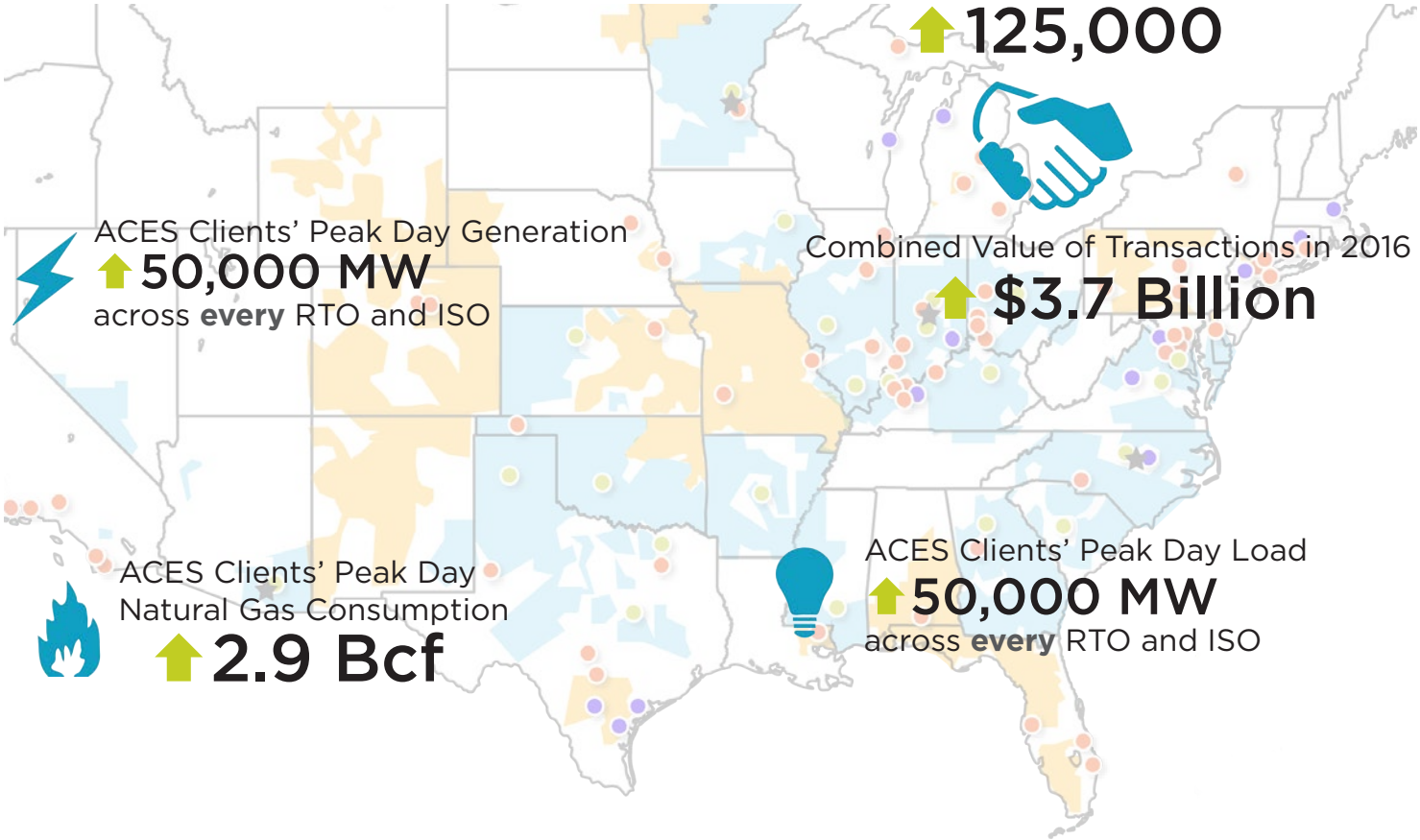
ACES is a nationwide energy management company.

We help our Members and Customers buy, sell and manage energy more efficiently, and with less risk.

Quick Facts

Founded	1999
Headquarters	Carmel, IN
Employees	240+
Members	22
Customers	40+
Regional Trading Centers	Carmel, IN Benson, AZ Raleigh, NC Maple Grove, MN

Statistics



*ACES refers to its 22 owners as Members, its non-Member customers as Customers, and both collectively as Clients.

Members

- Arizona Electric Power Cooperative
- Arkansas Electric Cooperative Corporation
- Big Rivers Electric Corporation
- Brazos Electric Cooperative
- Buckeye Power
- Central Iowa Power Cooperative
- Central Electric Power Cooperative, Inc.
- Co-operative Energy
- East Kentucky Power Cooperative
- Golden Spread Electric Cooperative
- Great River Energy
- Hoosier Energy Rural Electric Cooperative
- North Carolina Electric Membership Corp.
- Oglethorpe Power Corporation
- Old Dominion Electric Cooperative
- Prairie Power, Inc.
- Rayburn Country Electric Cooperative
- Southern Illinois Power Cooperative
- Southern Maryland Electric Cooperative
- Sunflower Electric Power Corporation
- Wabash Valley Power Association
- Western Farmers Electric Cooperative

Customers*

- AK Steel
- Allegheny Electric Cooperative
- Associated Electric Cooperative
- Bay City Electric Light and Power
- Central Texas Electric Cooperative
- Citizens Electric Company
- City of Garland, TX
- City of Glendale, CA
- City of Palo Alto, CA
- City of Pasadena, CA
- City of Roseville, CA
- CoBank
- Cornbelt
- Delaware Municipal Electric Corp
- Development Partners
- DTE Energy Trading
- EDF Renewables
- HenderSun Energy
- Holland Energy
- Kansas Electric Power Cooperative
- Kenergy
- Kroger
- Lively Grove
- Midland CoGen
- Minnkota
- Michigan Public Power Agency
- New Hope Power Partners
- NextEra Energy
- NorthEast Nebraska
- National Renewable Cooperative Organization
- National Rural Electric Cooperative Association
- NTE Energy
- Omaha Public Power District
- Owensboro Municipal Utilities
- Pedernales Electric Cooperative
- Pennsylvania Renewable Resources Association
- Pioneer Electric
- Power & Water Resources Pooling Authority
- PowerSouth Energy Cooperative
- Recurrent Energy
- Resolution Power
- Seminole Electric Cooperative
- South Plains Electric Cooperative
- Sterling Energy Management
- Sunrise Energy
- Tri-County Electric Cooperative
- Tri-State Generation
- University of Cincinnati
- Washington St. Tammany Electric Cooperative
- Wellsboro Electric Company

*some Customers cannot be listed due to confidentiality agreements

Complete Service List

FRONT OFFICE SERVICES

- Portfolio Strategy
- Short-Term Trading and Operations
- Short-Term Load Forecasting
- Origination and Long-Term Trading
- Portfolio Dispatch and Optimization
- Delegated Electric Reliability Standard Compliance
- Power Transmission Scheduling and Tagging
- Physical Gas Trading and Scheduling
- Financial Gas Trading
- Gas Service Consulting
- Coal and Emissions Consulting
- Renewable Analysis and Transactions
- Financial Transmission Right Evaluations and Hedge Execution
- Transmission Analysis and Advice
- Long-Term Generation and Transmission Planning Studies
- Standard Portfolio Model and Risk Analytics

MIDDLE OFFICE SERVICES

- Credit Analysis and Counterparty Monitoring
- Credit Exposure Monitoring and Management
- Credit Negotiations
- Credit Reports
- ISO/RTO Credit Monitoring Service
- Master Agreement Negotiations
- Emissions Allowances and Renewable Energy Credits Agreement Negotiations
- Contract Monitoring and Administration
- Trade Capture and Validation
- Policy Compliance Monitoring
- Forward Curve Development and Mark-to-Market Valuations
- Risk Management Policy Development
- Education and Training
- Regulatory and Market Development Participation
- Reliability Compliance Consulting
- Dodd-Frank Compliance

BACK OFFICE SERVICES

- Bilateral Power and Transmission Settlements
- Bilateral Natural Gas and Transportation Settlements
- RTO/ISO Pool Settlements
- Energy Imbalance Validation
- Cost Allocation Settlement Model
- Electric Quarterly Report (EQR) Filing Support

Service Categories

Power Trading

SNAPSHOT

59
ACES Clients

1999
Service Start Date

85
Dedicated Staff

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Description

The Power Trading team manages generation assets, supply contracts, and market transactions to optimally meet capacity, energy, and ancillary service obligations. In addition to load following, portfolio optimization, and generation scheduling, the trading department secures and optimizes transmission positions. Additionally, ACES provides trade execution and scheduling services in every ISO/RTO market and all major electricity markets. To meet the growing needs of Clients, a multi-functional infrastructure has been established within ACES' Power Trading team that includes power trading, energy scheduling, transmission management, generation dispatch and scheduling services, and demand side management operations.

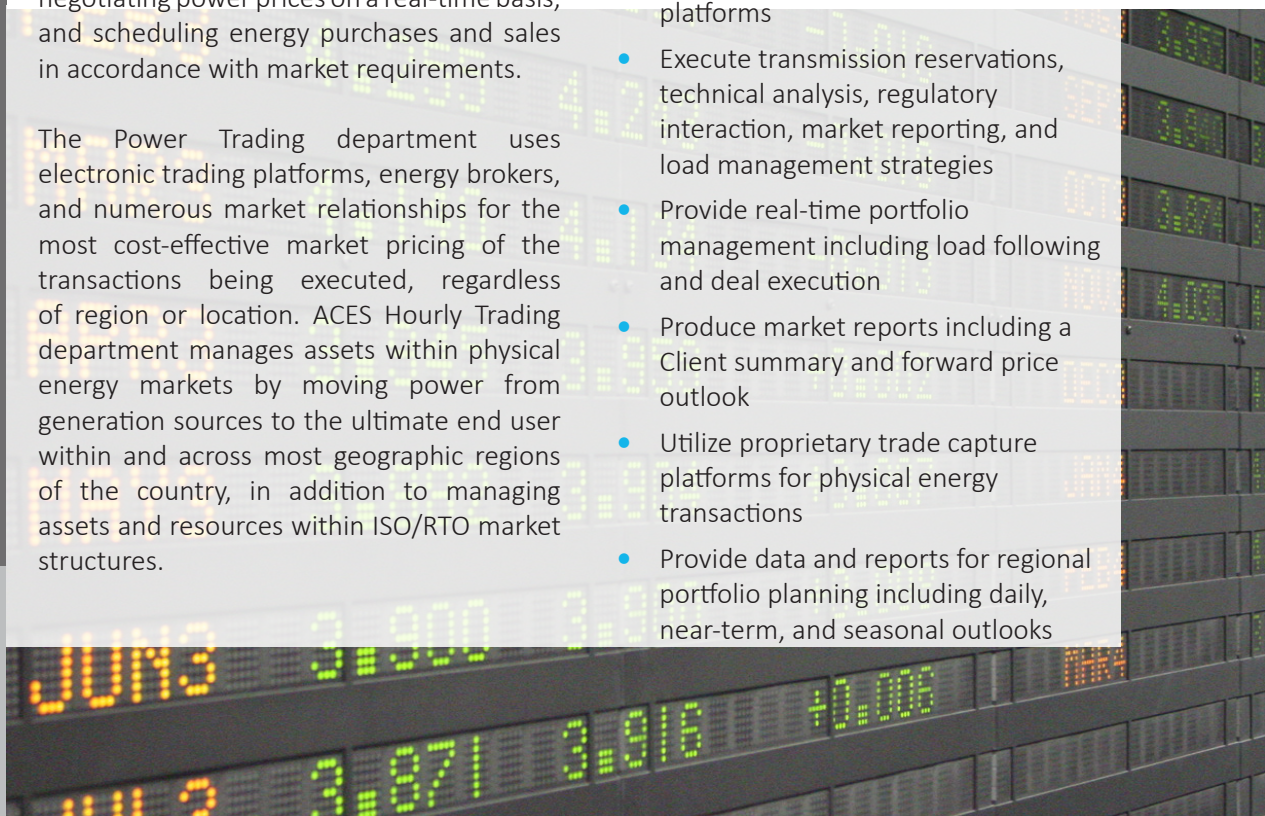
The Power Trading department uses a large variety of assets to achieve the most cost-effective market pricing of the transactions being executed, regardless of region or location. In addition, ACES maintains an experienced staff capable of handling generation scheduling services, meeting the 24-hour requirements of ISOs/RTOs, negotiating power prices on a real-time basis, and scheduling energy purchases and sales in accordance with market requirements.

The Power Trading department uses electronic trading platforms, energy brokers, and numerous market relationships for the most cost-effective market pricing of the transactions being executed, regardless of region or location. ACES Hourly Trading department manages assets within physical energy markets by moving power from generation sources to the ultimate end user within and across most geographic regions of the country, in addition to managing assets and resources within ISO/RTO market structures.

Services

ACES Power Trading department provides the following services on behalf of its Clients:

- Develop customized capacity, energy, and ancillary service strategies
- Forecast expected energy and ancillary service clearings in ISOs/RTOs and provide daily cost to serve reports
- Represent Client portfolios in physical and structured markets
- Manage generation scheduling services to meet the operational requirements of the ISO/RTO structured markets
- Negotiate commercial aspects of energy supply contracts such as price, term, and location with power suppliers
- Plan, coordinate, and execute daily power optimization strategies
- Assess and develop portfolio hedging strategies
- Execute hedge strategy transactions, as necessary, utilizing direct trading, brokers, and/or electronic trading platforms
- Execute transmission reservations, technical analysis, regulatory interaction, market reporting, and load management strategies
- Provide real-time portfolio management including load following and deal execution
- Produce market reports including a Client summary and forward price outlook
- Utilize proprietary trade capture platforms for physical energy transactions
- Provide data and reports for regional portfolio planning including daily, near-term, and seasonal outlooks



Meteorology

SNAPSHOT

30
ACES Clients

2000
Service Start Date

30
Wind Forecasts

Description

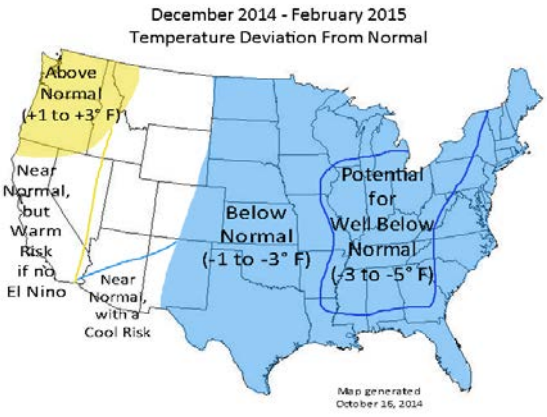
ACES' Meteorology department provides both real-time and near-term technical weather analysis and forecast reporting to the trading departments as part of the ongoing optimization process. The Meteorology department also provides detailed weather forecast analysis and reports to Clients as part of their short and long-term planning requirements.

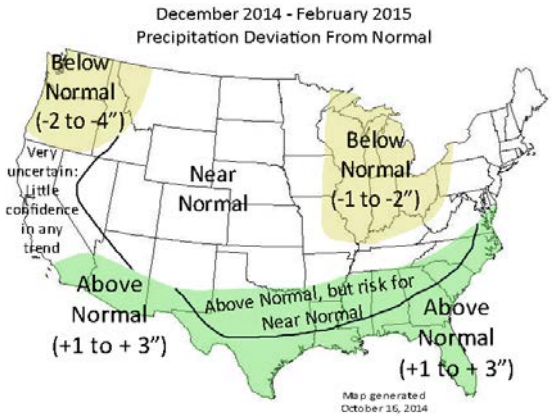
ACES' Meteorology department also provides Clients with weather briefings and consultations. Briefings and consultations are offered daily, weekly, monthly, quarterly, and on an "as-needed" basis. The department quickly and thoroughly responds to requests and feedback from the trading groups, Members, and Customers.

Services

The following analyses and forecast services are provided by the Meteorology department:

- Daily 15-day forecast discussions
- Monthly and seasonal outlooks
- Tropical weather discussions
- Wind and solar generation forecasts
- Detailed analysis of significant weather events
- Customized products tailored to the individual Client location or service territory
- Acquisition of historical weather data
- Weekend and off-peak forecast updates





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Fuels

SNAPSHOT

22
ACES Clients

2001
Service Start Date

198
Bcf of Natural Gas Transacted in 2016

25
Pipelines Managed

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Description

ACES has established a natural gas infrastructure to meet the specific fuel needs for gas-fired generation. ACES' Fuels department actively manages natural gas related assets on behalf of our Clients. Transportation and storage assets are dynamically dispatched based on market conditions and dispatch schedules. The department also provides strategy development for natural gas procurement, long-term planning of natural gas supply and infrastructure, and natural gas price risk hedging. ACES' Natural Gas department works closely with the Power Trading Desk to optimize dispatch in the real-time markets and with the Portfolio Strategy, Origination, and Portfolio Modeling departments on long-term planning and hedging recommendations.

While ACES' Clients continue to be dependent on coal as a fuel source, ACES has the expertise to provide support regarding coal supply and transportation in addition to hedging coal price risk and associated diesel fuel price risk.

Services

ACES' Fuels department provides the following services on behalf of its Clients:

- Develop customized fuels strategies for Members and Customers
- Build necessary infrastructure to effectively implement operational and hedge strategies
- Negotiate with pipelines, suppliers, and marketing companies on behalf of Clients
- Originate long-term physical gas supply agreements with suppliers
- Review and recommend pricing clauses during power purchase agreement (PPA) negotiations
- Establish, coordinate, and implement daily energy supply optimization
- Utilize a variety of electronic bulletin boards from interstate and intra-state pipelines
- Execute financial transactions, including futures, options, and swaps
- Procure natural gas from reliable suppliers 24 hours/day
- Nominate and schedule natural gas supplies to reduce exposure to pipeline penalties
- Provide forward market data from NYMEX, brokers, and electronic trading platforms
- Produce weekly market reports, including forward price outlooks
- Utilize Allegro software to capture trades and plant activity for reporting and invoicing
- Provide training in fuels fundamentals and hedging strategies
- Provide fuels consulting services on an as needed basis

Scheduling

SNAPSHOT

35
ACES Clients

1999
Service Start Date

9500
Annual Interchange Transactions

Description

Scheduling is fundamental to energy transaction execution and an integral component for successful portfolio management. To meet the growing needs of Clients, as well as the ever-changing energy industry, a multi-functional infrastructure, which includes Scheduling Services, has been established within the ACES' Front Office.

ACES retains experienced power and natural gas schedulers who execute scheduling services across all regions and markets. These services extend to day-ahead physical and financial power scheduling, including the tagging of bi-lateral transactions. Scheduling services also include the reservation of daily and/or hourly point-to-point and network transmission via electronic OASIS. Natural gas scheduling and nominations in the East, South, and West regions of the U.S., and parts of Canada are also available. ACES' Scheduling department has extensive expertise in the energy industry and is capable of performing multiple scheduling functions across the country. Services are performed in accordance with a variety of market requirements and conditions.

Services

The ACES Scheduling department performs the following scheduling services:

- Schedule energy for Clients to meet their respective obligations under various agreements or other scheduling requirements
- Schedule energy and transmission to minimize Client power costs
- Follow regionally accepted scheduling practices
- Schedule power within physical and financial energy markets
- Purchase short-term transmission rights and tag physical energy transactions
- Utilize risk management software to capture transmission transactions
- Nominate and schedule natural gas supply, reducing exposure to pipeline penalties
- Utilize electronic bulletin boards for interstate pipelines
- Review and reconcile pipeline/ counterparty invoices
- Follow risk management policies, where applicable
- Provide data retention on all activities undertaken on a Client's behalf
- Schedule coordination between regions
- Schedule into and out of structured markets

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Portfolio Strategy

SNAPSHOT

20
ACES Clients

2011
Service Start Date

6 Dedicated Staff

Description

The dynamic nature of energy markets requires diligent monitoring and management of power supply portfolio risks. It is important to stay on top of the changing tools and values that different forward portfolio structures can provide for power assets and load-serving entities. Whether it is mitigating exposure to budget certainty, designing a portfolio that can more closely adapt to competitive market pressures, or analyzing the risks and benefits from incremental forward portfolio changes, the ACES Portfolio Strategy team of experienced professionals can provide collaborative support for actionable strategies to enhance portfolio positions, and hedge exposure to the various risks in the energy markets.

Portfolio Strategy works closely with the team of analysts in ACES' Portfolio Modeling and Transmission groups to quantify commodity and congestion risks specific to each Client's portfolio. The department also has experience supporting future resource decisions by comparing buy vs. build decisions, fundamental research into RTO capacity market prices and risks, and integration of locational considerations for congestion and pipeline services. Regulatory changes create other risks for future planning and require qualitative considerations, preferably prior to making investment decisions. Portfolio Strategy will provide you with specific, actionable steps you can take that will limit your exposure to unwanted risks and better position your portfolio to take advantage of opportunities.

Services

ACES' Portfolio Strategy department performs the following services on behalf of its Clients at ACES' National Service Center in Carmel, Indiana:

- Develops energy portfolio risk analytics for forward time horizons (from next season to very long-term asset evaluations)
- Develops collaborative strategies to meet risk and portfolio goals with clients, consistent with targeted hedging time horizons
- Provides specific client recommendations to position forward portfolio toward client risk profile
- Coordinates multiple ACES departments to deliver integrated, instead of commodity-specific portfolio strategies
- Supports resource planning for new plant builds, merchant asset purchases/sales, and power purchase agreements
- Integrates renewables into future portfolios
- Performs fundamental analysis of RTO capacity markets and portfolio capacity recommendations
- Coordinates valuation and due diligence for asset purchases and sales

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Portfolio Modeling

SNAPSHOT

27
ACES Clients

2000
Service Start Date

440
Reports Delivered YTD

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Description

Deregulated wholesale energy market participants need to have a dynamic market driven model that measures their portfolio risk to load, forced outages, and daily price volatility. The central goal of the Portfolio Model is to assist with strategically determining hedges to meet a firm's risk tolerance. The key model output is an estimate of the expected variable cost to serve native load accompanied by a statistical measure of potential variation (risk) in the average variable cost. The model results quantify the expected cost and risk inherent for any portfolio in any period. The model results help determine the firm's hedge strategy commensurate with its risk tolerance. While many models, including the ACES Portfolio Model, provide a single point estimate of costs, prices, fuel needs, etc., the ACES Portfolio Model also provides Clients with a detailed probability distribution of possible results. The ACES Portfolio Model quantifies a firm's exposure to:

- Power prices
- Natural gas prices
- Native load and long-term sales obligations
- Incremental transactions and hedging activities
- Generation outages and de-rates
- Emissions

The ACES Merchant Plant Model

The merchant plant model is used to measure expected operational and potential profit or loss involving a merchant power plant. Hedging strategies for both purchases and sales of fuel and power are modeled to assist in the development of fuel supply, trading, and marketing strategies.

Supporting Products and Services

Pricing: ACES maintains national market intelligence data for standard and structured market prices, as well as fundamental information that drives regional price behavior and trends.

Standard Product Pricing: Standard market products such as forward and option contracts are evaluated and priced by the pricing desk.

Contract Valuations: Existing or proposed contracts are valued against market alternatives to determine if these contracts should be entered, exited, or extended. Examples include contract buy-out valuations, heat rate and tolling transactions, unit outage insurance, long-term structured products, and full or partial requirements contracts.

Generation Plant Evaluations: Analysis evaluating the economics between building plants, buying plants, or buying market power.

Structured Product Determination: Analysis of Client load profiles to determine the structured or peaking products that best fit the portfolio along with a valuation to be used in negotiations with energy marketing firms.

General Consulting

Studies and services involving statistical, financial, pricing, or contractual evaluations of power related issues are performed on a consulting basis, as requested by the Member or Customer.

While the portfolio model helps determine the hedge strategy, other supporting products and services determine if the contractual and financial terms of market alternatives are appropriate. Utilizing the full line of ACES structured products and services yields objective results surrounding both the fit and fairness of transactions entered to hedge portfolios.

Renewable Energy

SNAPSHOT

28
ACES
Clients

2006
Service Start Date

2.8
Million RECs
Transacted YTD

Description

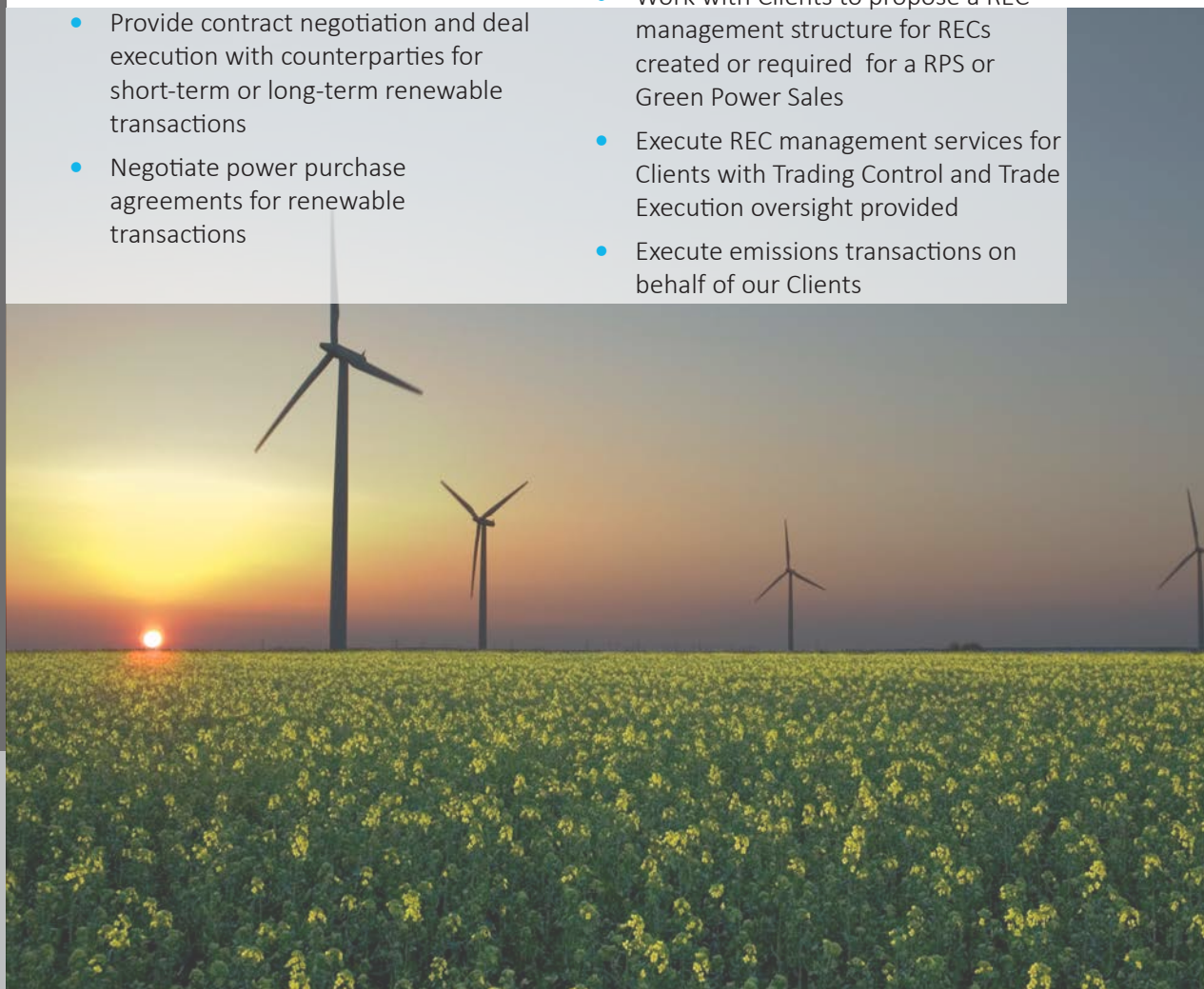
Twenty-nine states have a Renewable Portfolio Standard (RPS) and renewable development is increasing across the U.S. With renewables becoming a larger portion of Client portfolios, ACES offers customizable Renewable Energy Services. ACES provides expert analysis of Renewable Energy legislation and market dynamics.

ACES also provides Emission Services, which are an integral part of ACES' integrated portfolio management. The Emissions department works closely with the Power Trading desk to optimize dispatch in the real-time markets, and with the Marketing, Portfolio Modeling, and Origination departments on long-term planning and hedging recommendations.

Services

The following services are available to both Members and Customers:

- Provide contract negotiation and deal execution with counterparties for short-term or long-term renewable transactions
- Negotiate power purchase agreements for renewable transactions
- Provide training for emissions fundamentals and hedging strategies
- Conduct a thorough due diligence of RPS legislation in areas where Clients are located to identify the risks and associated impacts on portfolios
- Analyze the renewable markets, providing a supply and demand outlook in many Renewable Energy Credit (REC) markets
- Conduct an evaluation of current Clients' REC assets
- Identify possible opportunities for new development of renewable resources by and for Clients
- Develop, implement, and manage customized renewable energy management strategies for Clients
- Identify a range of potential markets where RECs can be bought and sold
- Work with Clients to propose a REC management structure for RECs created or required for a RPS or Green Power Sales
- Execute REC management services for Clients with Trading Control and Trade Execution oversight provided
- Execute emissions transactions on behalf of our Clients



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Origination

SNAPSHOT

21
ACES Clients

2000
Service Start Date

2043
MW Transacted YTD

Description

ACES' Clients are faced with medium-term and longer challenges managing changing energy portfolio obligations and opportunities in addition to short-term commercial operations.

Originated products, with seasonal to intermediate 1-5 year terms, are a natural complement to other ACES Services, as well as longer-term utility asset resource planning. The driver for originated business is a proactive portfolio enhancement, targeting deals that fit a Clients' risk tolerance and portfolio hedging objectives. ACES Origination combines Front Office expertise in marketing services and trade execution with valuation supported by the Structuring and Portfolio Modeling departments.

Services

Origination Services draw upon and integrate ACES expertise to:

- Provide contact, negotiation, and deal execution with counterparties for term and structured product transactions
- Coordinate application of originated product offerings in context of the overall portfolio and hedging program
- Employ financially-settled and physical delivery products for power and fuels
- Provide a collaborative strategy setting for counterparty and product choices
- Integrate with Portfolio Modeling services to value potential and executed origination products
- Integrate with Contract Administration services which document the more complex originated transactions
- Integrate with Credit services for the longer-term exposure to originated-deal counterparties
- Integrate with Trading Control services to capture and integrate originated deals for on-going position management and risk policy adherence

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Transmission

SNAPSHOT

42
ACES Clients

2006
Service Start Date

670
Congestion Hedging Recommendations

Description

The Transmission department works in conjunction with other ACES Front Office staff to provide a layer of strategy and execution within the ACES business model by hedging the power basis and delivery risk in Client portfolios. Transmission services are part of the overarching energy price risk management process within ACES.

ACES has an experienced staff of trading, econometric and engineering expertise to address the complexity of the physical realities of the energy markets, as well as the changing nature of the financial transmission markets developing across the ISOs and RTOs. The department performs the following service functionalities related to transmission and constraints on the grid:

Financial Transmission Modeling and Execution

As part of the integrated portfolio management at ACES, the Transmission department provides services for financial transmission products across all continental United States organized power markets (ISOs/RTOs) including:

- Developing customized congestion management strategies from 10 years out to a monthly timeframe
- Evaluating pre-existing rights (ARRs, PCRRs, etc.) and optimizing their utilization
- Constructing auction bidding strategies and execution of FTR/ARR/TCR/CRR hedge strategies
- Providing congestion valuation based on quantitative models, historical market data, and fundamental analysis
- Providing reporting on auction results and congestion management strategy performance
- Providing daily market intelligence on fundamental drivers of congestion
- Keeping abreast of market and policy changes impacting transmission and congestion issues
- Developing, planning, and implementing strategies to enter new market structures as the industry changes

Physical Transmission Analysis and Execution

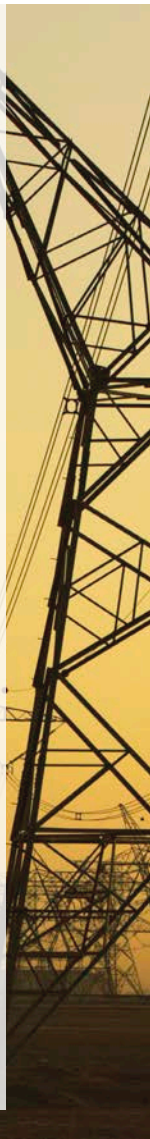
The Transmission department actively pursues physical transmission portfolios in non-ISO/RTO regions. Physical transmission services are also provided with ISO/RTO markets, as needed for compliance, as well as inter-market activities. These services include:

- Providing market intelligence on availability and cost/benefits of physical transmission
- Interacting with the ACES Regulatory department to be aware of policy changes impacting non-RTO regions
- Assessing potential transmission impacts to bilateral purchases and sales
- Recommending physical transmission portfolios integral to the energy hedging of the portfolio
- Querying, submitting, and purchasing transmission across the footprint of traditional power markets

Transmission Analysis Services

The ACES Transmission department provides analysis, reports, and consulting on many aspects of the transmission grid. Typical projects include:

- Generation Siting Studies
- Generation Type Studies and Comparisons
- LMP forecasting
- Long Term Planning
- Assistance with the ISO/RTO generation interconnection process
- Analysis of joining an organized market
- Environmental Regulation Impact Studies



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Portfolio Performance Reporting (PPR)

SNAPSHOT

18
ACES Clients

2013
Service Start Date

5 RTO Markets

Description

ACES' Portfolio Performance Reporting (PPR) service provides profit and loss (P&L) reporting by using business analytics to identify short-term trends and improve our Clients' portfolio performance. PPR is a service designed to do more than simply report data in a user-friendly manner. ACES' experienced team will analyze data on a near-real-time basis and provide feedback to the Client, aligning with ACES' service-oriented Portfolio Risk Management process. This service is designed to provide strategic Front Office feedback. While PPR is provided using a sophisticated, customized software product, the true value is created by the individuals within the PPR team.

Event Driven Analysis

The PPR team provides the human element necessary to realize the process and to provide customized, Client-specific analysis, including:

- Identification of performance issues ("red flags")
- Personal evaluation of the raw data for a more thorough forensic study
- Deeper analysis for root cause definition and strategic adjustments
- Analysis designed for executive-level reporting

Primary Focus of PPR

- Examine the cost of load zones per MWh
- Examine the cost of load forecast error
- Examine generation and resource portfolio performance
- Determine "Make Whole Payment" eligibility
- Compare Ancillary Services (AS) revenues to AS obligation costs
- Confirm generation units are selling AS when expected
- Confirm AS revenues off-set obligations
- Examine day-ahead and real-time price deviations
- Examine power and transmission hedges
- Examine portfolio locational marginal pricing (LMP) node trends
- Optimize day-ahead option strikes
- Provide portfolio summary reporting:
  - Detailed portfolio scorecards
  - Daily operation review
  - LMP trend summaries
  - Day-ahead/real-time (DART) spread
  - Weekly summary reports or dashboards

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Regulatory Services: Companion

SNAPSHOT

39
ACES Clients

2004
Service Start Date

12
Regulatory Bodies Monitored

Description

ACES Clients that receive commercial Front Office services are assured appropriate support for regulatory responsibilities that are directly related to the commercial activities ACES performs on their behalf. ACES' Regulatory and Market Affairs department assures that ACES staff is aware of and prepared to comply with current and prospective FERC, NERC, Regional Entity (RE), Regional Transmission Organization(RTO), and Independent System Operator (ISO) rules and non-RTO regulations for the services provided to each Client.

ACES also provides companion services that cover both mandatory reliability compliance regulations and electric market affairs.

Reliability Compliance

All users, owners, and operators of the bulk power system are required to comply with the mandatory Reliability Standards based on the role(s) for which they register through their RE. Although ACES is not registered for any of the NERC-defined compliance roles, it satisfies compliance requirements for Clients who delegate specific ERO responsibilities to ACES.

ACES executes Delegation Agreements with Clients to identify the operational functions that ACES performs on their behalf to fulfill Client ERO requirements for their roles as Generator Operator (GOP) and Load-Serving Entity (LSE). While ACES has the operational responsibility to the Client for provision of the reliability compliance requirements, the Client is ultimately responsible for compliance to the RE and NERC. ACES will fulfill its responsibility as outlined in the Delegation Agreement through the following processes:

- Creation of detailed Client-specific ERO desk procedures
- Creation of Client-specific ERO training, which ACES' real-time staff is required to complete annually
- Internal agreed upon procedures testing
- Client self-certification support and provision of evidence for Client audits

If Clients require additional assistance with reliability compliance, ACES offers customized reliability compliance services.

Electric Market Affairs

The Regulatory and Market Affairs department is responsible for monitoring, analyzing, and communicating regulations, rules, policies, proposals, procedures, decisions, and standards, as applicable, for both ISO/RTO and non-ISO/RTO regulatory environments. ACES' regulatory and Front Office staff work together to assure compliance with all rules and regulations related to the services provided to Clients. These companion services are fulfilled through the following processes:

- Timely reporting to Clients and ACES staff on regulatory or market changes that are directly applicable to the services provided by ACES
- External representation and support to ACES staff through participation in RTO stakeholder groups, task forces, and committees
- Research of statutes, regulations, tariffs, and rules required to support Client agreements
- Coordination of market activities with Clients

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Regulatory Services: Expanded

SNAPSHOT

23
ACES Clients

2004
Service Start Date

Presence in
20+
RTO/ISO Committees

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Description

ACES' Regulatory and Market Affairs department actively participates, on behalf of Clients, in the development of regulations and on-going changes in commercial market rules for the following regulatory bodies:

- MISO
- FERC
- PJM
- Peak Reliability/WECC
- CAISO
- SERC
- SPP
- NAESB
- ERCOT

ACES' Regulatory and Market Affairs department and subject matter experts throughout the company have positions on various committees, working groups, and task forces, which provide our Clients with insight and access to various initiatives being developed. It is important for all market participants to have representation to ensure that the rules and regulations that are being established represent the entire industry. ACES' Expanded Regulatory Services include the following features:

- Monitor, analyze, and communicate regulations, rules, policies, proposals, procedures, decisions, and standards to recommend effective business strategies to Clients, as applicable, for both ISO/RTO and non-ISO/RTO regulatory environments
- Provide external representation, as agent, and support to Clients through participation in ISO/RTO stakeholder groups, task forces, committees, regional reliability organizations, and other industry groups
- Register proxy votes at RTO stakeholder meetings
- Provide assistance in ISO/RTO applications and registrations for participants or new services (load, generation, NITS, demand response, etc.)
- Develop or assist with creating RTO straw proposals or disputes
- Develop or assist with creating FERC filings or interventions
- Perform research of statutes, regulations, and rules in the review of positions and filings by Clients
- Provide timely reporting of regulatory or market changes that may impact Clients, regardless of services provided by ACES

Expanded Regulatory Services are carried out through the following processes:

- Develop a Client strategy to address key ISO/RTO, NAESB, FERC, or other regulatory initiatives, committees, or working groups
- Maintain a prioritized list of regulatory issues by market and Client to direct regulatory priorities
- Establish issue-based coverage and provide a structured approach to analyzing regulatory issues and their impacts on Client portfolios
- Carry out processes to assure proactive inclusion of regulatory issues into ACES' integrated portfolio management approach
- Coordinate/facilitate internal ACES subject matter experts and Client representatives to assess and analyze regulatory issues and provide clear reports to Clients regarding key issues

Expanded Regulatory Services are highly customizable and require extensive scoping.

NERC Reliability Compliance

SNAPSHOT

22
ACES
Clients

2011
Service Start Date

Submitted
100+
Comments to
NERC in 2016

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Description

ACES' Reliability Compliance services were created to focus specifically on mandatory NERC Reliability Standards. The Reliability Compliance department provides information sharing, analysis, and training regarding impacts of new and existing federal reliability regulations, including cyber security regulations.

Information Sharing

ACES' Reliability Compliance department attends various NERC and FERC forums and reports information resulting from these meetings. The department is responsible for filtering and disseminating the following relevant information:

- Impact of FERC orders relating to NERC Standards and compliance
- Notification of Standards' effective dates
- Ballot recommendations for draft Reliability Standards
- NERC committee updates
- Commenting on Standards
- Reports of current initiatives and activities relating to Standards and compliance

Cyber Security and Critical Infrastructure Protection (CIP)

ACES' Reliability Compliance department maintains intelligence relating to NERC Critical Infrastructure Protection (CIP) Reliability Standards and other government entity cyber security activities. The Cyber Security and CIP services also provide information sharing, compliance analysis, and advice capabilities. To support this service, the Reliability Compliance department performs the following:

- Attends NERC Critical Infrastructure Protection Committee (CIPC) meetings
- Participates in cyber security exercises, such as GridEx
- Monitors and participates in National Institute of Standards and Technology (NIST) meetings on the White House Executive Order and Presidential Policy Directive
- Publishes monthly cyber security newsletters
- Monitors upcoming versions of the CIP Reliability Standards and assists with preparation and transition plans

System Operator Online Training

ACES is a NERC-approved Continuing Education Provider. The Reliability Compliance department supports NERC-certified system operator training needs by developing online training that focuses on NERC Standards and power industry topics. Online training provided by ACES is eligible for NERC Continuing Education Hours (CEH) and may be applied toward other certifications (CEU, CPE, etc.) upon approval from the certifying entity. ACES' online Learning Management System (LMS) provides tracking and reporting capabilities to assist in maintaining compliance evidence for future audits.

ACES offers over 80 NERC-Approved CEHs with courses covering the following categories:

- Introduction to NERC
- Resource and Demand Balancing (BAL) Standards
- Balancing Calculations and Workbooks
- Communications (COM) Standards
- Cyber Security
- Emergency Preparedness and Operations (EOP) Standards
- Interchange Scheduling and Coordination (INT) Standards
- Interconnection Reliability Operations and Coordination (IRO) Standards
- Personnel Performance, Training, and Qualifications (PER) Standards
- Protection and Control (PRC) Standards
- Transmission Operations (TOP) Standards
- Voltage and Reactive (VAR) Standards

NERC Reliability Compliance Cont.

Learning Management System (LMS) Administration and Training Development

ACES' Reliability Compliance and Corporate Development departments are dedicated to administering a highly customizable, secure LMS Portal for its Clients. ACES staff has partitioned this portal into groups, allowing Clients to conduct their own individualized training activities, conduct basic administration, and report generation separately, while still having access to ACES' extensive catalog of online training. ACES also offers a variety of services that include:

- Development of AICC, SCORM, and Tin Can compliant training for instructor-led, online, and mobile training environments
- Conversion of Client instructor-led training courses to computer-based training formats
- Instruction of administrative functionality for Client group administrators
- Advising for group administrators on training plan development, automation, and training management
- Development of customized advanced reporting, dashboard, and portal layouts

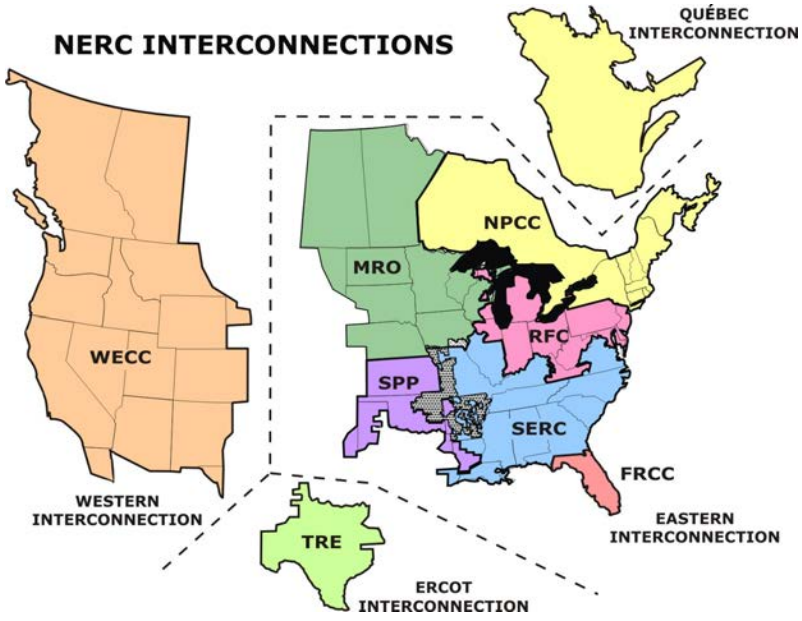
Consulting

ACES' Reliability Compliance department provides analysis on policies, procedures, and existing programs to determine program adequacy and identify areas needing improvement. The department also performs research and provides recommendations on specific Standards and compliance issues, upon request. Additional consulting services may include, but are not limited to, the following:

- Mock audits
- Gap analysis
- Subject matter expert interview training
- Development of coaching to assist with audit preparation

Consulting and Gap Analysis of NERC Training Requirements

ACES' Reliability Compliance department also provides consulting services to Clients by analyzing their training programs and assessing their ability to maintain reasonable assurance with various NERC training requirements. This consultation includes reviewing staff training records, course work materials, training plans and supporting documentation, RSAWs, and other supplemental evidence. Engagements are custom to the Client's needs and focus on regional audit practices and NERC guidance.



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Energy Risk Management

SNAPSHOT

32
ACES Clients

2002
Service Start Date

55
Custom Training Sessions

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Description

ACES' Corporate Development department offers a variety of education, training, and consulting services to suit the needs of various Clients. ACES currently offers customized in-person and online training.

Online Training

ACES offers online training to meet risk management and energy trading professional development needs of staff, management, and governing bodies (i.e. Board Directors, Commissioners) through ACES' Learning Management System (LMS). Most of the online courses are eligible for Continuing Professional Education (CPE) hours and Continuing Education Units (CEU) upon approval from the certifying entity. There are 15 Energy Risk Management online training modules available that address the following topics:

- Introduction to Energy Risk Management
- Energy Risk Management Policies
- Integrated Portfolio Management
- Energy Trading

Demonstration courses are available to review upon request. Online training fees are charged on a per user, per year basis depending on the desired level of access. Discounts may apply for Clients enrolling 10 or more users.

In-Person Training

ACES' in-person training is tailored toward Load-Serving Entities and the unique challenges they face as power suppliers. ACES has standardized training materials; however, courses are generally customized to meet the needs of the Client's training objectives. Courses can be targeted toward staff, management, Board of Directors, or the City Council. Selected training topics include:

- Creating appropriate risk management policies and governance
- Establishing power supply risk tolerance
- Alternative power supply portfolio structures and developing a portfolio
- Infrastructure requirements for various power supply portfolios
- Understanding specific risks applicable to a Client (commodity price, credit and contract, organizational, operational risk, regulatory, volumetric, congestion)
- Methods for managing specific organizational risks
- How trading and hedging works
- Operating in an ISO/RTO market
- Consulting

ACES' Corporate Development department also offers a variety of consulting services that include:

- Strategic planning
- Enterprise or energy risk management policy development (governance and hedge policies)
- Energy or enterprise risk management diagnostics
- Energy or enterprise risk management program development

Trading Control

SNAPSHOT

56
ACES Clients

1999
Service Start Date

21
Dedicated Staff

465
Daily Reported Forward Price Curves

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Description

The ACES Trading Control department performs the following services on behalf of its Clients utilizing ACES' Transaction Execution/Trading Service or would like a trading control environment for their own trading activity:

Risk Management Policy Development

The Trading Control department assists Clients in drafting energy and enterprise risk management policies, trading authority policies, hedge policies, and sanctions policies.

Trade Capture Review and Validation

ACES Trading Control department is responsible for verifying that all executed trades are captured completely, accurately, and timely into its energy transaction and risk management systems.

Trade Capture Accuracy Tracking

ACES Trading Control department tracks trade capture accuracy by trader and provides weekly accuracy statistics to the Trading management.

Transaction Reporting

ACES Trading Control provides transaction related reports to Clients each day through the ACES web portal. Trading Control ensures that the transaction data reported from the risk systems and released on the portal is accurate and complete.

Trading Authority Policy and Hedge Policy Compliance Monitoring

Trading Control monitors transactions executed on behalf of a Client against their trading authority policy to ensure compliance. Trading Control also works closely with the ACES Portfolio Modeling department to monitor its Clients' portfolios for compliance with their respective hedge policies.

Forward Curve Development and Reporting

The Portfolio Valuation department within Trading Control is responsible for developing forward prices, volatility, correlation, and interest rate curves used to value forward transactions. The Portfolio Valuation department provides various forward pricing reports to Clients through the ACES web portal.

Mark-to-Market Valuations

Trading Control marks-to-market all forward transactions completed by Clients for purposes of determining the mark-to-market credit exposure to external counterparties.

Data Submission to Price Index Developers

Trading Control submits transaction data to several price index developers each afternoon, Monday through Friday. Transaction data provided to index developers includes next-day and longer fixed-priced, physical, power, and natural gas transactions.

Compliance Monitoring of ERO Delegated Requirements

Trading Control monitors trading activity to ensure compliance with ERO standards delegated to ACES.

Dodd-Frank Recordkeeping and Reporting

Trading Control reviews all executed transactions to identify any Dodd Frank swaps. Trading Control assists its Clients who have Dodd Frank swaps with their recordkeeping and reporting requirements.

Credit

SNAPSHOT

52
ACES Clients

1713
Monitored Counterparty Relationships

598
Counterparty Relationships

Description

Credit Services have become one of the most critical requirements for companies participating in today's energy markets. ACES has established credit files for approximately 400 counterparties in handling the credit needs of its Clients.

Services

ACES' Credit department performs the following services on behalf of its Clients:

- Create customized credit policies for Members and Customers
- Analyze each counterparty's creditworthiness and update each analysis at least annually
- Assign credit ratings, when necessary, to each counterparty based upon ACES' proprietary scoring model
- Maintain credit files for each counterparty
- Monitor credit exposures
- Manage credit limit exceptions
- Recommend and establish credit limits for each counterparty
- Create daily credit exposure reports which are website accessible
- Handle daily collateral calls and monitor collateral activity
- Obtain and renew credit enhancements
- Negotiate credit provisions as they may pertain to EEI contracts, ISDA agreements, and NAESB agreements for Clients
- Monitor bond spreads and credit default swaps to assess market risk
- Create credit restriction lists that are distributed via email and posted to the ACES web portal
- Participate in ISO/RTO Credit Working Groups
- Maintain daily contact with key industry participants to stay on top of issues
- Periodically send out pertinent industry news items to Clients

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Contract Administration

SNAPSHOT

32
ACES Clients

2000
Service Start Date

3057
Active Contracts

Description

Contract Administration is a key element in managing business risks and opportunities in today's wholesale energy market. ACES manages approximately 3,000 agreements for its Clients.

Services

ACES' Contract Administration Department performs the following services on behalf of its Clients:

- Implement contractual controls
- Identify key contractual issues
- Ensure contracts are in place to facilitate trading
- Ensure trades are executed with the proper legal entities and within available products
- Terminate duplicate contracts
- Ensure existing contracts contain up-to-date credit provisions and adequate contractual provisions to minimize business risk
- Ensure assignments have been maintained for mergers and acquisitions
- Enter contracts into the risk system to facilitate trading
- Generate reports, contractual products and provisions list, and custom reports as requested
- Monitor trade execution within contract(s)
- Draft damage claim notice letters
- Analyze and summarize contract provisions
- Negotiate and secure replacement agreements
- Negotiate EEI, NAESB, and ISDA agreements with potential counterparties
- Negotiate and facilitate emissions and renewable agreements with future and current counterparties
- Establish NYMEX accounts
- Prepare Transmission Service applications
- Coordinate with Credit department to ensure adequate credit provisions within agreements
- Monitor, track, and provide notice of contract renewal and expiration dates
- Prepare contract amendments, if necessary

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Back Office Settlements

SNAPSHOT

77
ACES Clients

1999
Service Start Date

21
Dedicated Staff

Description

Verification of energy transactions that have settled during each month is an essential process. It is imperative that ACES' Clients are paying the correct amount for the energy that was purchased, and are invoicing their customers correctly for the energy sold during the month. Other departments within ACES utilize this transactional data to perform services (i.e., the credit department uses the data for the credit exposure reporting).

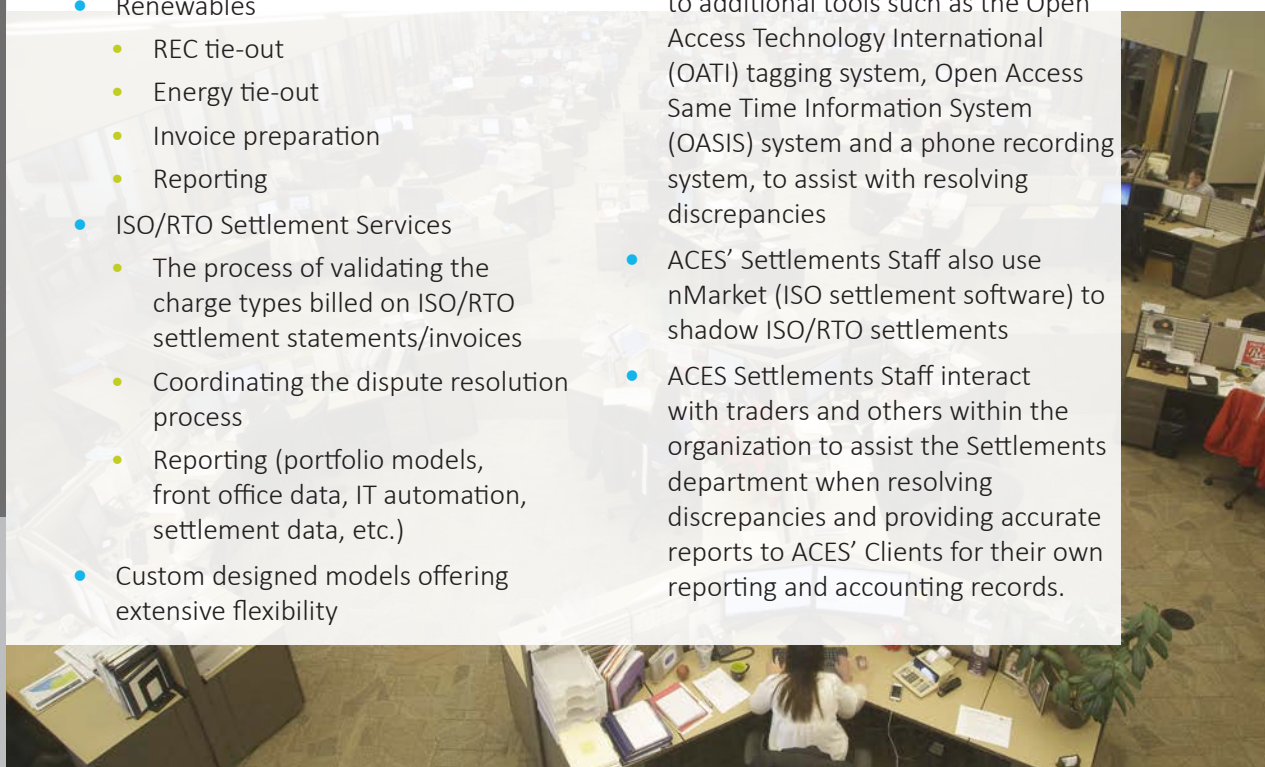
Services

ACES Back Office Settlement Services include:

- Settlements Services for Bilateral (physical and financial gas and power transactions), Transmission transactions, and broker fees
  - Monthly verification with the counter party of the total units and dollars of energy transaction (gas and power) that occurred during the month, including reconciling and resolving any differences that are identified during the process.
  - Invoice preparation
  - Reporting
  - FERC EQR reporting
- Renewables
  - REC tie-out
  - Energy tie-out
  - Invoice preparation
  - Reporting
- ISO/RTO Settlement Services
  - The process of validating the charge types billed on ISO/RTO settlement statements/invoices
  - Coordinating the dispute resolution process
  - Reporting (portfolio models, front office data, IT automation, settlement data, etc.)
- Custom designed models offering extensive flexibility
  - Accommodates dynamic changes associated with spot gas prices, bilateral bids and offers, and other changing market conditions
  - Analysis and reporting tailored to meet Client needs
  - Scenario analysis and reporting for ad hoc requests
- Incorporates both rule-based allocation methodologies and cost/benefit allocation methodologies including impacts associated with:
  - Unit/contract commitment
  - Unit/contract dispatch
  - Unit/contract provision of ancillary services and ancillary requirements
  - Bilateral trades
  - Market settlement data
  - Invoicing and adjustments

Benefits of ACES' Settlement Services include:

- ACES' Settlements staff are knowledgeable, experienced, professional, and well respected within the industry.
- ACES utilizes a central data repository
- ACES' Settlements staff have access to additional tools such as the Open Access Technology International (OATI) tagging system, Open Access Same Time Information System (OASIS) system and a phone recording system, to assist with resolving discrepancies
- ACES' Settlements Staff also use nMarket (ISO settlement software) to shadow ISO/RTO settlements
- ACES Settlements Staff interact with traders and others within the organization to assist the Settlements department when resolving discrepancies and providing accurate reports to ACES' Clients for their own reporting and accounting records.



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