

2022 Demand Response Auction Mechanism (DRAM) Request for Offers (RFO)

Scheduling Coordinator Aggregated Information Packets

Table of Contents

ACES		page 2
	DRAM RFI Response 090915_Updated 2021.pdf	page 3
	SCRFI_InfoPacket 090915_Updated 2021.pdf	page 14
APX		page 16
	DRAM SCRFI_APX submittal.pdf	page 17
	APX-MarketSuite-Datasheet.pdf	page 19
	APX-Power-Scheduling-Solution.pdf	page 22
	Brochure--APX-Power-Market-Operations-Overview.pdf	page 24
	DR Brochure Final.pdf	page 26
Customized Energy Solutions		page 28
	CES - Galt Power CA DR DRAM Experience_Updated 2021.pdf	page 29
EDF		page 38
	EDF Scheduling Coordinator RFI Response.pdf	page 39
Olivine		page 44
	DRAM RFI Response_Olivine 2021.pdf	page 45

2022 DRAM RFO

Scheduling Coordinator Aggregated Information Packets

Submission 1:

ACES

Submitted by:

Todd Harrington | Director of Business Development - West Region

ACES® | 4140 West 99th Street | Carmel, IN 46032

o: 317.344.7026 | m: 317.771.0025 | toddh@acespower.com

September 10, 2015

Dear DRAM Participants:

Alliance for Cooperative Energy Services Power Marketing LLC (ACES) looks forward to interacting and potentially providing services to Demand Response Auction Mechanism (DRAM) participants. ACES is a nationwide energy management company that helps its Clients buy, sell, and manage energy more efficiently, and with less risk. ACES has been active in the CAISO since 2007 and we continue to grow and improve our services in this territory.

ACES was founded in Carmel, Indiana in 1999 by four Generation and Transmission (G&T) cooperatives. Today, ACES helps manage and reduce risk for more than 60 national Clients from four offices strategically located throughout the country. In 2014, ACES executed over 125,000 transactions on behalf of our Clients with a combined value of \$4.8 billion. On a peak day our traders manage over 50,000 MW of load and generation, with a maximum natural gas consumption of approximately 3.0 Bcf/day.

ACES takes pride in providing high quality services at a reasonable cost. As you review the following solicitation please keep in mind that ACES operates as an extension of your staff, ensuring full alignment with the best interests of your organization.

ACES will be available to answer questions at the request of any DRAM participant.

If you have any questions or comments regarding the information provided, please contact me at 317.344.7026 (business), 317.771.0025 (cellular), or toddh@acespower.com.

Sincerely,

Todd Harrington
Director of Business Development



4140 West 99th Street
Carmel, IN 46032
t: 317.344.7000
f: 317.344.7001
www.acespower.com



ACES RFI Response

Demand Response Auction Mechanism RFI for
Scheduling Coordinator Services

September 10, 2015



Table of Contents

1. Executive Summary	3
1.1. ACES CAISO Market Interaction	3
2. ACES Business Structure and Qualifications.....	5
2.1. ACES' Business Model and Organization.....	5
2.2. ACES' Qualifications	5
3. Fee Structure	7
4. Contact Information	7
5. References	8
6. Current Clients.....	9
6.1. Members	9
6.2. Customers	9
6.3. Service Territory	11

1. Executive Summary

Alliance for Cooperative Energy Services Power Marketing LLC (ACES) is pleased to provide this informational response to potential participants (Participants) in the Demand Response Auction Mechanism (DRAM). ACES is uniquely positioned to provide Scheduling Coordinator (SC) services as mentioned in the RFI. There are many advantages to working with ACES, as detailed in this response.

ACES is an industry leader and provides customized energy risk management services utilizing economies of scale based on an established infrastructure. Each Client's portfolio is customized based on guidelines established by the Client in conjunction with ACES' knowledgeable staff.

1.1. ACES CAISO Market Interaction

ACES provides services for six Clients in California with aggregate portfolios of over 1,200 MW of demand. As a result, ACES has considerable experience in WECC and CAISO market operations, scheduling, and settlements. ACES has also provided consulting services to other Clients in California including municipal power utilities, irrigation districts, and other industry participants.

ACES is active in day-to-day CAISO activities, long-term strategy creation, and settlements. The following are examples of some CAISO activities ACES administers on behalf of its Clients:

- Day-Ahead Activities
 - Provide SC services “as agent”
 - Manage and optimize day-ahead positions
 - Provide trade execution services
 - Submit energy demand bids
 - Submit generation offers
 - Submit market-based ancillary offers
 - Provide energy and ancillary co-optimization strategies
 - Manage demand response needs
 - Execute virtual transactions
 - Manage interchange schedules
 - Manage Client resource adequacy (RA) needs
 - Monitor and manage Client Master Files
 - Submit resource outage information to the CAISO

- Real-Time Activities
 - Provide SC services “as agent”
 - Manage and optimize real-time positions
 - Monitor unit availability and load
 - Update parameters and generation offers
 - Manage deviations between CAISO dispatch instructions and actual MW output of units
 - Address locational marginal price (LMP) opportunities versus unit production costs
 - Provide trade execution services
 - Manage unit contingency and e-tag curtailments

- Forecasting Activities
 - Provide day-ahead LMP, wind, solar, and load forecasting, and incorporate into short-term optimization recommendations

- Trading Control Services
 - Establish and monitor risk control limits and authority policies
 - Provide transaction review
 - Provide transaction reporting
 - Monitor compliance of ERO delegated requirements
 - Provide FERC 741 support
 - Provide deal capture transaction review
 - Provide voice and instant messenger deal capture
 - Verify and confirm trades
 - Provide vintage deal capture
 - Provide mark-to-market valuations
 - Develop forward price curves
- Contract Administration Services
 - Negotiate and secure agreements
 - Review and monitor contracts
 - Provide master list reports
 - Monitor exceptions and violations
 - Monitor expirations
- Credit Services
 - Create customized credit policies
 - Analyze counterparty creditworthiness
 - Provide counterparty review and monitoring
 - Monitor exceptions and violations
 - Provide daily exposure reports
- Regulatory Services
 - Provide timely reporting of regulatory and market changes
- Reliability Compliance Services
 - Establish and monitor ERO delegated requirements
 - Support self-certification relative to delegated requirements
- Long-Term Portfolio Model Services
 - Provide hedge recommendations for establishing forward power positions
 - Stress test portfolios to anticipate outcomes
 - Determine benefits of insurance products
 - Conduct stochastic and deterministic model runs to measure risk within portfolios
- Transmission Analysis Services
 - Conduct long-term price forecasting
 - Provide CRR strategy creation and recommendations
 - Analyze impacts of new transmission lines
 - Analyze impacts of new/retired generation
 - Analyze costs and benefits of ISO/RTO/EIM membership

- Settlements Services
 - Manage all charge types
 - Provide shadow settlements
 - Provide CAISO and bilateral settlement services
 - Submit meter data to the CAISO
 - Validate statements and invoices
 - Provide dispute resolution services
 - Provide feedback and custom reporting

- Consulting Services
 - Conduct Client-specific training
 - Perform GAP analysis
 - Develop and implement market strategies

2. ACES Business Structure and Qualifications

2.1. ACES' Business Model and Organization

Since its formation in February 1999, ACES has become a nationally recognized wholesale energy trading and risk management company. ACES was originally created by generation and transmission cooperatives. ACES is a Limited Liability Company (LLC), but operates with similar values as its 21 cooperative Member-Owners. ACES focuses on providing high quality services at a reasonable cost and is able to utilize economies of scale to achieve this objective.

ACES' energy risk management services provide value for its cooperative Members, as well as a broad range of Customers including independent power producers, municipal power utilities, public utility districts, irrigation districts, cooperatives, and other industry participants.

ACES is unique in that it acts "as agent" on behalf of all of its Clients. This means that ACES does not, and never has, taken title to any commodity, including power, natural gas, fuel oil, emissions, renewable energy credits, transmission, or natural gas pipeline transportation. ACES' "as agent" business model ensures that ACES will not have a conflicting commercial position in any market its Clients operate in and that all transactions are in the best interest of the Client. This approach is unique to ACES, as most other service providers take commodity positions and operate to make a profit in the marketplace. While ACES is qualified to provide SC Services "as agent", ACES does not submit schedules on its own behalf. ACES only submits schedules on behalf of its Clients, the registered SCs.

ACES has approximately 250 employees and is headquartered in Carmel, Indiana, with Regional Trading Centers (RTC) in Raleigh, North Carolina; Maple Grove, Minnesota; and Benson, Arizona. ACES has an established and regularly tested business continuity plan between its offices.

2.2. ACES' Qualifications

ACES is uniquely qualified to provide services to Participants in the DRAM, as ACES' services are focused on analytics associated with energy risk management and hedging strategies. ACES uses a combination of third-party and internally-developed modeling software supported by data from the numerous markets in which it transacts "as agent."

ACES manages a significant amount of confidential data for each individual Client through a combination of specific internal guidelines, the company's trading control group, the company's corporate compliance manager, and periodic reporting to the company's Board of Directors Risk Oversight and Audit Committee. The following information highlights and reiterates ACES' experience, expertise, and value to its Clients:

- Extensive Client Portfolios
 - ACES currently has 21 Members and approximately 50 Customers that operate in all NERC regions. ACES operates in all ISOs and in traditional markets in the South, Southeast, and West. Collectively, ACES manages approximately 50,000 MW of peak load and 50,000 MW of generation capacity on behalf of its Clients. ACES manages over 3 Bcf of natural gas for fuel supply on peak generation days.
- Alignment of Goals Through "As Agent" Structure
 - ACES encourages its Clients to participate in the development of energy risk management and hedging strategies, and executes those strategies in the market through transactions as their legal "agent." ACES' agency role allows for the proper alignment of the Client's and ACES' business objectives. By contrast, merchant energy trading companies and numerous investor-owned utilities and their affiliates trade speculatively "for profit" and are most profitable when energy prices are volatile.
- Independent Examination of Energy Risk Management Controls
 - From 2002 through 2014, ACES has engaged internationally recognized accounting firms to perform examinations of its risk control environment, in accordance with the American Institute of Certified Public Accountants Statements on Standards for Attestation Engagements No. 16 (SSAE 16) - Service Organizational Controls (SOC) Report 1 Type II. These voluntary SOC 1 examinations focus on ACES' risk control processes and procedures associated with the transaction execution services ACES provides "as agent" for its Clients in the energy markets. The scope of the examinations covers the following areas: Risk Oversight, Contract Administration, Credit, Trading Control, Position Valuation, Settlements, and Information Technology. ACES will again undergo an examination of its risk control environment in 2015.
- Participatory Risk Management Process
 - ACES has developed comprehensive energy trading and controls processes and procedures. ACES' approach to transaction execution and risk management is a participatory process with the objective of creating value and energy supply savings for its Clients, rather than for itself. 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.
- ISO/RTO Portfolio Specialization
 - ACES' Client base consists mostly of ISO/RTO market participants that are load-serving entities. As such, ACES has developed a high level of expertise managing these portfolios and has acquired extensive operational expertise associated with the management of various types of generation assets, from the development of forward hedging strategies to real-time around-the-clock trade execution. ACES has intricate knowledge of the dispatch for all types of generation. Furthermore, since ACES acts "as agent" for its clients and does not manage its own trading book, all the services provided are focused on maximizing the value and minimizing the liabilities of the Clients' portfolios.

- Analytical Capabilities
 - ACES has extensive analytic expertise in modeling load-serving entity portfolios and analyzing and valuing generation resources and PPAs within their portfolios. This analysis includes portfolio risk modeling, transmission and congestion modeling, hedge strategy development, and execution strategy development.
- Business Continuity
 - ACES' infrastructure allows for redundant connectivity between its regional trading centers, near real-time transaction based replication, and remote connectivity to applications via the internet. ACES utilizes backup generation at each of its offices to ensure there will never be an interruption in its operations, and has a business continuity plan that is regularly tested.

3. Fee Structure

ACES offers a la carte services that are customized to meet the Client's needs. These services can be priced individually or as a bundle. ACES works with the Client to create a detailed scope of work. The scope of work is developed in coordination with the ACES departments who provide the services. Once the scope of work is approved by the Client, ACES service departments provide time estimates specific to the services selected and a service fee is calculated. Service fees do not change during the term of an agreement unless the scope of work is modified, there is a significant change in the market in which Client's portfolio resides, or the targeted startup date changes greatly. Should any of these scenarios occur, ACES will work closely with the Client to ensure the agreement, services, and fees are updated appropriately.

4. Contact Information

Entity:

Alliance for Cooperative Energy Services Power Marketing LLC (ACES)
4140 West 99th Street
Carmel, IN 46032
Office: 317.344.7000
Fax: 317.344.7001

Primary Contact:

Todd Harrington
Director of Business Development
4140 West 99th Street
Carmel, IN 46032
Office: 317.344.7026
Cell: 317.771.0025
toddh@acespower.com

Alternate Contact:

Andy Whitesitt
Vice President of Business Development
4140 West 99th Street
Carmel, IN 46032
Office: 317.344.7089
Cell: 317.501.8829
andyw@acespower.com

5. References

Pasadena Water and Power
Shari Thomas
Assistant General Manager

City of Glendale Water & Power
Mark Young
Integrated Resource Planning Administrator

Roseville Electric
Michelle Bertolino
Executive Utility Director

More information regarding these individuals and other references will be made available upon request.

6. Current Clients

6.1. Members

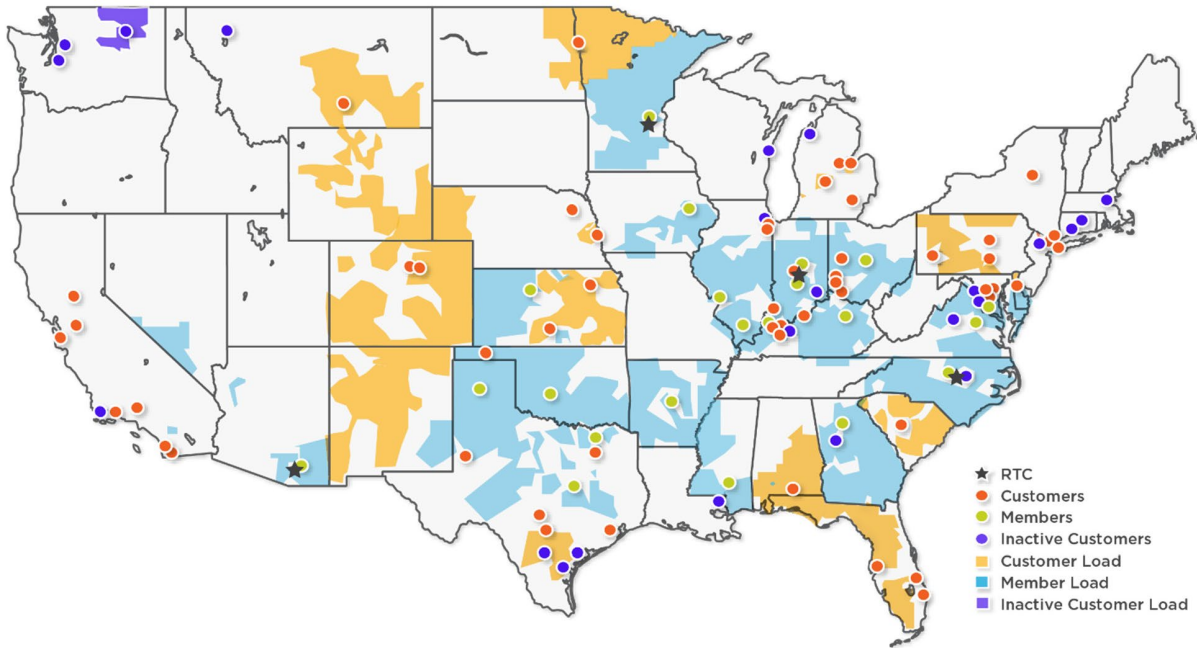
- Arizona's G&T Cooperatives
- Arkansas Electric Cooperative Corporation
- Big Rivers Electric Corporation
- Brazos Electric Power Cooperative, Inc.
- Buckeye Power, Inc.
- Central Iowa Power Cooperative
- East Kentucky Power Cooperative
- Golden Spread Electric Cooperative, Inc.
- Great River Energy
- Hoosier Energy Rural Electric Cooperative
- North Carolina Electric Membership Corporation
- Oglethorpe Power Corporation
- Old Dominion Electric Cooperative
- Prairie Power, Inc.
- Rayburn Country Electric Cooperative
- South Mississippi Electric Power Association
- Southern Illinois Power Cooperative
- Southern Maryland Electric Cooperative
- Sunflower Electric Power Corporation
- Wabash Valley Power Association
- Western Farmers Electric Cooperative

6.2. Customers

- AEP Energy Partners
- AK Steel
- Allegheny Electric Cooperative
- Bay City Electric Light and Power
- Cash Creek Generation
- Central Electric Power Cooperative
- Central Texas Electric Cooperative
- City of Glendale, CA
- City of Palo Alto, CA
- City of Pasadena, CA
- City of Roseville, CA
- CoServ
- CPS Energy
- CSN
- Customer First Renewables
- Development Partners
- Element
- Delaware Municipal Electric Corp.
- Generation Energy
- Lea County
- Midland CoGen
- Minnkota
- MPPA
- NextEra Energy
- New Hope Power Partners
- National Renewables Cooperative Organization
- Omaha Public Power District
- Owensboro Municipal Utilities
- Pedernales Electric Cooperative
- Pennsylvania Renewable Resource Association
- Power & Water Resource Pooling Authority
- PowerSouth Energy Cooperative
- Seminole Electric Cooperative
- Southern Montana Electric
- Sterling Energy
- Sunrise Energy
- Vectren
- Victoria Electric Cooperative
- Wallingford Electric Division
- Wellsboro Electric Co.

Note: Due to confidentiality restrictions within some of our Service Agreements, not all of ACES' Customers are listed.

6.3. Service Territory



Information Packet Template for Scheduling Coordinator Request for Information

Company Name of Scheduling Coordinator: ACES
Address of Company: 4140 W 99th St
Carmel, IN 46032

Contact Name: Todd Harrington
Contact Phone Number: 317-344-7000
Contact Email: toddh@acespower.com

Are you registered to provide scheduling coordinator services? Yes, as agent
If yes, what is your SCID Number? As agent ACES uses the client's SCID

Are you currently bidding into the CAISO Market? Yes

If yes,

- Are you actively bidding? Yes
- Are you bidding in Proxy Demand Resource, Reliability Demand Response Resource, or Participating Load Participating Load
- How long have you been bidding into the market? 8 years

If not,

- Have you previously bid products into the CAISO market?
- If so, what products were bid in?
- If so, when were these products bid in?

Have you ever bid into other wholesale energy markets? Yes

- If so, what products were bid in? Generation, capacity, and demand
- If so, when were these products bid in? Currently active

Are you a certified woman, minority, disabled veteran, lesbian, gay, bisexual and/or transgender business enterprise (WMDVLGBTBE) Supplier? No, but ACES will employ and advance in employment qualified individuals at all levels of employment without regard to race, color, religion, sex, age, national origin, veteran status, genetic information (or family medical history), disability, and any other legally-protected category.

Describe some of the terms and conditions under which you'd provide SC services to Sellers.
For instance:

- Size Limitations (e.g. a minimum PDR size that you will schedule?)
No restrictions
- Location Limitations (e.g. restrictions on where the PDR is located in California?)
No restrictions
- Registration Limitations (e.g. restrictions on the number of PDR registrations?)
No restrictions
- Seller Security Requirements No requirements.
ACES acts "as agent"

Information Packet Template for Scheduling Coordinator Request for Information

- Billing Arrangements
Services are fee based and billed monthly
- Other Terms and Conditions (additional information may be attached)

As a general matter, the SC will be required to provide the following services for each DRAM resource being bid into the CAISO market from June 2016 to December 2016. At a minimum, the SC will need to perform the following tasks:

- Bid into the CAISO market
- Provide award information to the Aggregator/Seller
- Provide CAISO settlements to Aggregator/Seller for performance in the market
- Calculate CAISO Grid Management Charges for Aggregator/Seller
- Validate Availability of Demonstrated Capacity (including potential audit fees)
- Certify that the resource is bid at or above the Net Benefits Test (NBT)
- Submit Meter data to CAISO
- Meter data submission
- Submit resource outage information to CAISO (via the Outage Management System (OMS))
- Submit requests to CAISO to change resource operating parameters in the CAISO Master File (via the Resource Data Template)
- Submit CIDI tickets to CAISO

What other services could you provide to the Seller that may be of interest (e.g. can you act as a wholesale DRP? Can you separate data within one PDR into individual Seller streams, if several aggregators have put their customers into one PDR?)

Please refer to ACES solicitation that accompanies this document

Other considerations for potential DRAM Sellers?

Provide complete this template and include any additional information that you would like to share with the potential DRAM bidders and return to DRAMRFO@pge.com. Responses are due by 5 PM Pacific Standard Time on September 10, 2015.

2022 DRAM RFO

Scheduling Coordinator Aggregated Information Packets

Submission 2:

APX

Submitted by:



Katherine Graham

COO and Head of Product Strategy

San Jose, CA

KGraham@apx.com

[\(408\) 517-2183](tel:(408)517-2183)



APX, INC SCHEDULING COORDINATOR RFI FOR DRAM

APX Headquarters: 2001 Gateway Place Suite 315W, San Jose, CA 95110

Cris Gallegos, Business Development, 408-517-2154, CGallegos@apx.com

Katherine Graham, Product Strategy, 408-517-2183, KGraham@apx.com

CURRENT SCHEDULING COORDINATOR SERVICES (CAISO REGISTERED AS APX1 #1020)

APX Scheduling Coordinator Services have been helping market participants since 1997. Our emphasis is on relationships and technology evolving constantly. Today we support over 25 APX SCIDs in addition to serving as an SC Agent for many more.

ARE YOU CURRENTLY BIDDING INTO THE CAISO MARKET? Yes, we are actively bidding in the CAISO Market supporting Participating Load, Renewable Resources, and conventional generation for municipalities, utilities, and asset owners.

While today we are not bidding in Proxy Demand Resources or Reliability Demand Response Resources, we have been supporting the largest demand response programs in California today for PG&E, SCE and SDG&E. We are very excited to build on these programs and provide services and technology to sellers participating in the upcoming DRAM. Our offering is compelling for the DRAM because we intend to fully support all required elements of the DRAM through solutions that are cost effective and as automated as possible.

ARE YOU CURRENTLY BIDDING IN OTHER ISOS? Yes, our technology and 24x7 Operations is utilized today in all other ISOs(MISO, SPP, ERCOT, ISONE, NYISO and PJM). Similar to our CAISO services, we operate as an Agent for many Market Participants who are actively bidding various products. In ERCOT, we support some of the largest Load Resources and ERS Aggregators through automated end-to-end solutions. Depending on the ISO market requirements, our clients utilize a combination of our scheduling, settlements, SCADA, integrated notification system and 24x7 Operations Center. We help our clients determine the right combination through evaluating integration points with our clients' processes and technology. Together we've developed cost-effective end-to-end solutions.

DESCRIBE SOME OF THE TERMS AND CONDITIONS UNDER WHICH YOU'D PROVIDE SC SERVICES TO SELLERS.

- Size Limitations (e.g. a minimum PDR size that you will schedule?) **None**
- Location Limitations (e.g. restrictions on where the PDR is located in California?) **We will be offering Scheduling Coordinator services to PDRs in PG&E, SCE and SDG&E service territories.**
- Registration Limitations (e.g. restrictions on the number of PDR registrations?) **None**
- Seller Security Requirements? **APX has a standard security policy which determines the requirements by client. We will take into account the CAISO credit policy and client activity and size.**
- Billing Arrangements **APX issues invoices weekly for CAISO fees(payment net 5 business days) and issues monthly invoices for APX services fees(payment net 30 days).**



- Is APX a certified woman, minority, disabled veteran, lesbian, gay, bisexual and/or transgender business enterprise (WMDVLGBTBE) Supplier? **No**
- Other Terms and Conditions (additional information may be attached) **APX develops a set of operational procedures for each client's required services support. This includes obligations/responsibilities for escalation to ensure expectations and CAISO rules are followed. These will be setup with each client individually.**

DESCRIPTION OF SERVICES FOR DRAM 2017

APX will meet all requirements to provide SC Services to DRAM sellers in the CAISO market from June 2017 to December 2017. APX intends to meet all of the tasks below:

- Bid into the CAISO market
- Provide award information to the Aggregator/Seller
- Provide CAISO settlements to Aggregator/Seller for performance in the market
- Calculate CAISO Grid Management Charges for Aggregator/Seller
- Validate Availability of Demonstrated Capacity (including potential audit fees)
- Certify that the resource is bid at or above the Net Benefits Test (NBT)
- Submit Meter data to CAISO
- Meter data submission
- Submit resource outage information to CAISO (via the Outage Management System (OMS))
- Submit requests to CAISO to change resource operating parameters in the CAISO Master File (via the Resource Data Template)
- Submit CIDI tickets to CAISO

WHAT OTHER SERVICES WILL APX PROVIDE TO DRAM SELLERS

In addition to the required services, APX will be providing reporting capabilities allowing DRAM sellers to easily develop their monthly invoices and show audit-ready details for demonstrating capacity and net benefits tests. APX will work with DRAM sellers to ensure these reports streamline processes. APX will also be able to work with DRPs and PDR resources to assist in developing additional strategies to bid the resource outside of the DRAM Must-Offer obligation if interested.

Furthermore, APX will be able to provide settlement details allocated to each PDR resource under a single SC ID.

Contact APX for more information about how APX can help you participate in the DRAM, either by acting as your DRP or by providing cost-effective SC services and technology solutions to DRPs.

PRICING FOR DRAM 2017

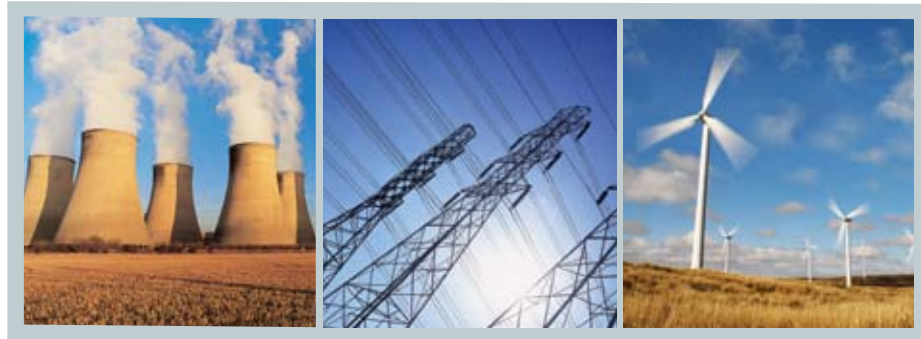
Please contact Katherine Graham or Cris Gallegos for pricing details. Pricing will be based on size of portfolio and term to be participating in DRAM. Additional services needed outside of those required will also be priced separately.

**Cris Gallegos, Business Development, 408-517-2154, CGallegos@apx.com
Katherine Graham, Product Strategy, 408-517-2183, KGraham@apx.com**

APX MarketSuite™

Trusted transaction platform and data infrastructure for energy markets

The APX MarketSuite, delivered via a Software as a Service (SaaS) model provides robust functionality combined with state-of-the-art, comprehensive business technology to support scheduling, operations, and settlement business processes related to ISO market participation.



APX MarketSuite benefits include:

- Comprehensive, web-based ISO Scheduling and Settlement application that fully supports business processes
- Ability to rapidly deploy and quickly scale unique ISO functionality and activity as needed through the SaaS model
- Minimal initial investment and reduced total cost of ownership
- Business continuity assurance through redundant facilities, systems, and 24/7 access and monitoring

Smart, dynamic selection criteria and input accelerators speed data entry and reduce errors. Users can review and modify scheduling data entered directly via the APX MarketSuite API or into the ISO portal.

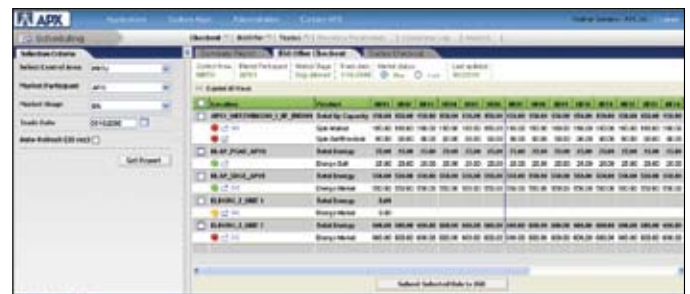
The centralization of all ISO scheduling transactions in the Checkout application, as well as automated workflows, ensures compliance with market timelines.

Comprehensive Functional Footprint

The APX MarketSuite incorporates all current ISO market rules and provides the robust functional footprint necessary to support ISO scheduling and settlement business processes including integration with upstream and downstream systems.

ISO Scheduling

The APX MarketSuite provides essential applications for the entry of bilateral schedules, self-schedules, market bids/offers, and resource parameters bound for the ISO market systems.



This centralized checkout application supports three key activities:

- Review and verify all scheduling transaction data in one place
- Quickly identify ISO submission problems with corresponding details to support resolution
- Review and compare market awards with bids and offers to support operations and scheduling adjustments for future market timeframes

ISO Settlement

APX MarketSuite reports help users to sort through the mass of data published in the ISO settlement statements and to support views of underlying billing determinants.



Account	Trade	Buy AC	Sell AC	Net Change	Open Interest	Vol	High	Low	Settle
APX Energy - California - Day Ahead	Day Ahead	1000000	1000000	0	1000000	1000000	1000000	1000000	1000000
APX Energy - California - Night Ahead	Night Ahead	1000000	1000000	0	1000000	1000000	1000000	1000000	1000000
APX Energy - California - Intraday	Intraday	1000000	1000000	0	1000000	1000000	1000000	1000000	1000000
APX Energy - California - Total	Total	3000000	3000000	0	3000000	3000000	3000000	3000000	3000000

The APX MarketSuite also provides comprehensive support for settlement verification, including establishing tolerances and automated identification of line items to dispute. The settlement application includes views to support month-end close, financial allocations to locations (versus rolled up by the ISO), as well as support.

Integration

For companies looking to streamline system processes and automate interfaces for ISO scheduling and data integration, the APX MarketSuite provides a secure Web Service interface and standard file structures. In addition to providing data in original formats as defined by the ISO, APX also provides customized data sets and reports based on user's individual needs.



Cost Effectiveness

The hardware, software, data center facilities, networking, initial solution development, change management of market-driven regulatory changes, and ongoing analyst and operations support required to support the ISO scheduling and settlement business processes can add up to millions for a typical market participant.

The SaaS delivery model of the APX MarketSuite provides clients a cost-effective way to obtain the same benefits of commercially licensed, internally operated software needed to support their ISO scheduling and settlement business processes without the associated complexity and high initial and ongoing costs. This approach enables clients to consolidate and outsource much of their IT needs for a predictable recurring fee. Clients avoid investing time and money purchasing hardware, software, and networking equipment; remove lengthy, costly installation and acceptance testing, and save staff time eliminating system operations, upgrades, and maintenance.

Application Availability and Business Continuity

In normal operating conditions, users access the APX MarketSuite from any web-enabled computer, whether at the office, at home, or half-way around the world. This provides users with work flexibility and emergency access that is unavailable through typical technology installations. Immediate access to critical processes is an important benefit to business continuity and disaster recovery planning.

APX has a long, proven track record in managing ISO transactions. APX systems are proven to be secure and available on demand, with fully staffed and geographically redundant facilities.



Look to the Leader

The APX MarketSuite is a state-of-the-art, feature-rich, rapid deployment solution that satisfies all requirements for ISO energy and ancillary service market participation. Together with dedicated account managers and 24/7 operations support, the APX MarketSuite enables users to focus on developing their core business processes and strategies. The APX MarketSuite continues to ensure the success of our client's participation in the power markets as their businesses expand and requirements grow.

**For more information please visit www.apx.com
or contact 408.517.2100.APX**

© 2009 APX Inc. All rights reserved. APX MarketSuite is a trademark of APX, Inc.
All other trademarks are properties of their respective owners.



APX Power Scheduling Solution

APX Power Markets provides secure, web-based application functionality for all scheduling business processes related to ISO Market participation through its state-of-the-art platform, the APX MarketSuite®. With the APX MarketSuite and Software-as-a-Service (SaaS) model, market participants benefit from minimal initial investment and reduced total cost of ownership.

Intuitive, Cross Market Scheduling Applications

Bid/Offer	Trades	Resource Parameters	Checkout	Reports
Ability to view, enter and modify bids, offers and self schedules for energy & A/S	Ability to view, enter and modify bilateral schedule information	Ability to view defaults and modify parameters associated with generation resources	Centralized hub for all ISO scheduling transactions	ISO Market Volumes ISO Meter Vs Schedule ISO Dispatched Energy ISO Prices Meter Data Custom Reports

The APX MarketSuite® provides essential applications for the entry of bilateral schedules, self schedules, market bids/offers, and resource parameters bound for ISO market systems. Smart, dynamic selection criteria and input accelerators speed data entry and reduce errors.

The centralization of all ISO scheduling transactions in the APX Checkout application, as well as automated workflows, ensures compliance with market timelines. The APX Checkout application supports the following key activities:

- Review and verify all scheduling transactions in one place and make any last minute changes using quick links
- Manually submit transactions to ISO
- Quickly identify ISO submission problems and trade mismatches using the status indicators with corresponding details to support resolution
- Review and compare market awards with bids and offers to support operations and scheduling adjustments for future market timeframes.

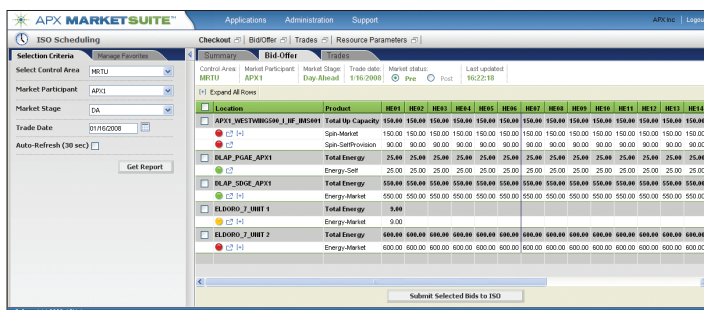
Software-as-a-Service Model

The ultimate in convenience, the APX MarketSuite is accessed via the Internet from anywhere and lets users transact in each ISO market, without ever having to manage a system update or upgrade on their own.

There is no need to build, buy, install and maintain an IT infrastructure and constantly changing scheduling applications. Business continuity is assured for market participants through redundant systems, facilities and 24/7 monitoring.

The APX MarketSuite in tandem with the SaaS model saves market participants valuable time and money through:

- Automated submissions of schedules/bids according to ISO timelines (optional)
- Automated harvesting of awards, trades, prices and other scheduling data
- Management of ISO public reference data and counterparties
- Registration of market participant IDs, facilities, resource parameters, and user authentication (logins)
- Configuration of market participant workflows and services
- Real-time monitoring and timely resolution of all workflow issues
- Monitoring and managing ISO market protocols and process changes and making the necessary system changes
- Managing security, digital certificates and connection reliability.



Workflow Management and Round-the-Clock Monitoring

Imagine getting the consistency of the APX MarketSuite across ISO regions, the convenient access to private and public data, the user-friendly features and reliable processing of all necessary file exchanges. That's what the workflow engine does. It's powerful enough to batch download and process large data files from many different systems and yet efficient enough to frequently create, submit, and harvest mission-critical files in conjunction with ISO deadlines.

Add round-the-clock monitoring by the APX operations staff and market participants are assured of timely, accurate ISO submissions and data quality. Real-time issues are expedited immediately to the APX operators on duty. Any data harvesting, loading or ISO issues are monitored by the APX operations department and resolved in a timely manner.



Integrated Solutions

For companies looking to streamline system processes and automate interfaces for ISO scheduling and data integration, the APX MarketSuite provides a cross market Scheduling API for a single point of integration to multiple ISO regions and web services for a machine-to-machine interface for uploading and downloading files and data.

APX offers a hosted SCADA solution integrated with the APX MarketSuite (availability dependent on ISO region). This integrated solution provides a cost-effective and reliable alternative by eliminating complexity, cost, and project risk for generators.

APX integrates third-party forecasts with the APX MarketSuite to automate ISO scheduling of intermittent resources, including the most current forecast updates prior to the adjustment period deadline.

Benefits of APX Power Scheduling Solution

- Manage ISO positions and submissions across ISO regions in one centralized location with status indicators and quick links
- Submit schedules/bids/offers and manage resources parameters and view market results from any location at any time
- Save time and avoid mistakes with smart selectors, copy forward, advanced copy and paste, sorting and filtering, and favorites
- Implement machine-to-machine processing with the cross market API for scheduling data and web services for file and data reporting
- Reduce internal administration, system and workflow monitoring, ISO tracking and storage costs
- Complying with data retention policies and requirements.

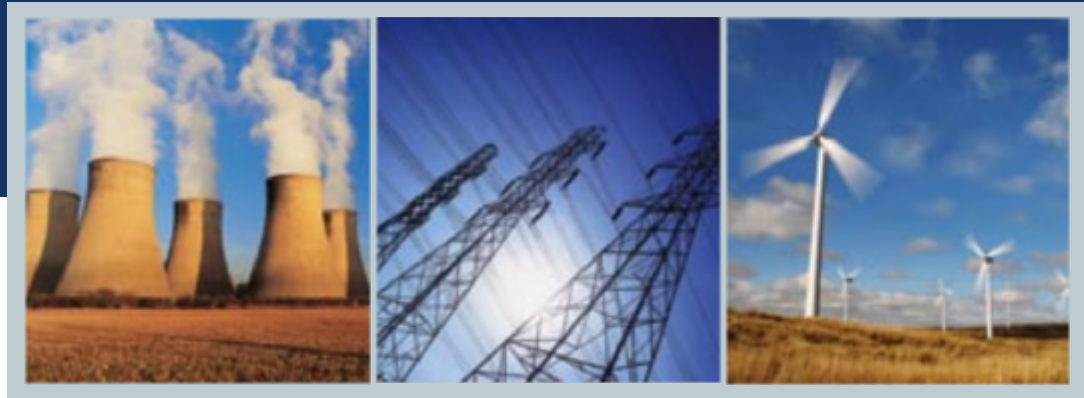
About APX Power Markets

APX Power Markets provides technology, energy consulting, and expert operational services to assist wholesale power market participants reduce costs and improve performance in power scheduling, settlement, market operations, and demand response programs. Clients include utilities, merchant companies, financial institutions, retail service providers, and other electricity market participants. A privately held company, APX is headquartered in San Jose, CA.

More information is available at www.apx.com or contact us at 408.517.2100.



APX Power Market Operations Solutions



Powerful Transaction Infrastructure Solutions and Services for Energy Markets

To succeed in the power markets you need information, enabling business technology and ongoing support to effectively participate in the power markets and drive your business decision processes – across your enterprise and around the clock. APX is the trusted industry leader with the technology solutions, support infrastructure and business processes to provide energy companies, financial institutions, power marketers, and ISO control areas with trusted information, analytics and services to create opportunities and maximize potential in these markets.

Powerful Transaction Infrastructure Solutions and Services for Energy Markets

APX MarketSuite™. The APX MarketSuite provides robust functionality combined with state-of-the-art, comprehensive business technology to support scheduling, operations, and settlement business processes related to ISO market participation. By leveraging and utilizing the APX MarketSuite, companies and organizations benefit from:

- A comprehensive ISO Scheduling and Settlement application that fully supports the business process, eliminating the need for work-arounds and manual processes to fill application gaps
- The ability to quickly scale unique ISO activity at the required time for their business leveraging integrated functionality that supports multiple business sectors and transactions
- Minimal initial investment and reduced total cost of ownership through predictable, all-inclusive monthly cost
- Business continuity during emergency conditions through geographically dispersed and fully redundant technology infrastructure

“APX’s hosted business model gave us a very cost effective way to fully support our market operations in California”

Ron Suess, President, Bottle Rock Power

APX Operations Services. APX professional operations staff provides 24/7 support services to address the unique business requirements of ISO/RTO related scheduling and settlement activities. The Operations staff supports industry accepted methodologies that are proven processes, procedures and communication protocols. Our experienced staff provides:

- Access to our qualified scheduling agent offering that supports expedited market entry and collapses ISO/RTO mandated timeframes
- Significantly reduced risk associated with ISO/RTO stringent scheduling requirements using proven, detailed and tested procedures
- Clearly defined emergency procedures to ensure exceptions are handled appropriately and promptly
- Around the clock coverage and flexibility of night, weekend, and holiday phone coverage to act as or supplement a 24/7 desk

- Piece of mind through validation of the accuracy of the ISO charges that appear on ISO issued settlement statements

“APX has the ability, skills, and resources in place to allow us to ramp up fast. This unique level of service truly sets APX apart.”

George Sladoje, Chairman, NECC

APX Professional Services. APX professional services provide proven industry expertise and a complete suite of services enabling companies to:

- Prepare for ISO market changes through training, customized business process design, and market testing support
- Determine ISO market entry strategy through analysis and evaluation decisions
- Design and implement custom hosted applications and reporting solutions support client-specific business processes
- Develop and implement internal procedures to streamline business processes and improve competitive performance.

“Our partnership with APX continues to expand into new areas such as decision support tools to keep us ahead of the game.”

Vice President, Large Retail Service Provider

Look to the Leader

APX provides all the components necessary for enterprises and organizations to enter, participate and manage change related to the ISO/RTO power markets. Whatever stage your business is in: start-up, expanding operations, or optimizing for efficiency, APX can help.

For more information please visit www.apx.com or contact 408.517.2100.

APX

244 Airport Parkway, Suite 600

San Jose, CA 95110

Tel: 408.517.2100

Fax: 408.517.2985

www.apx.com



APX Demand Response Solutions

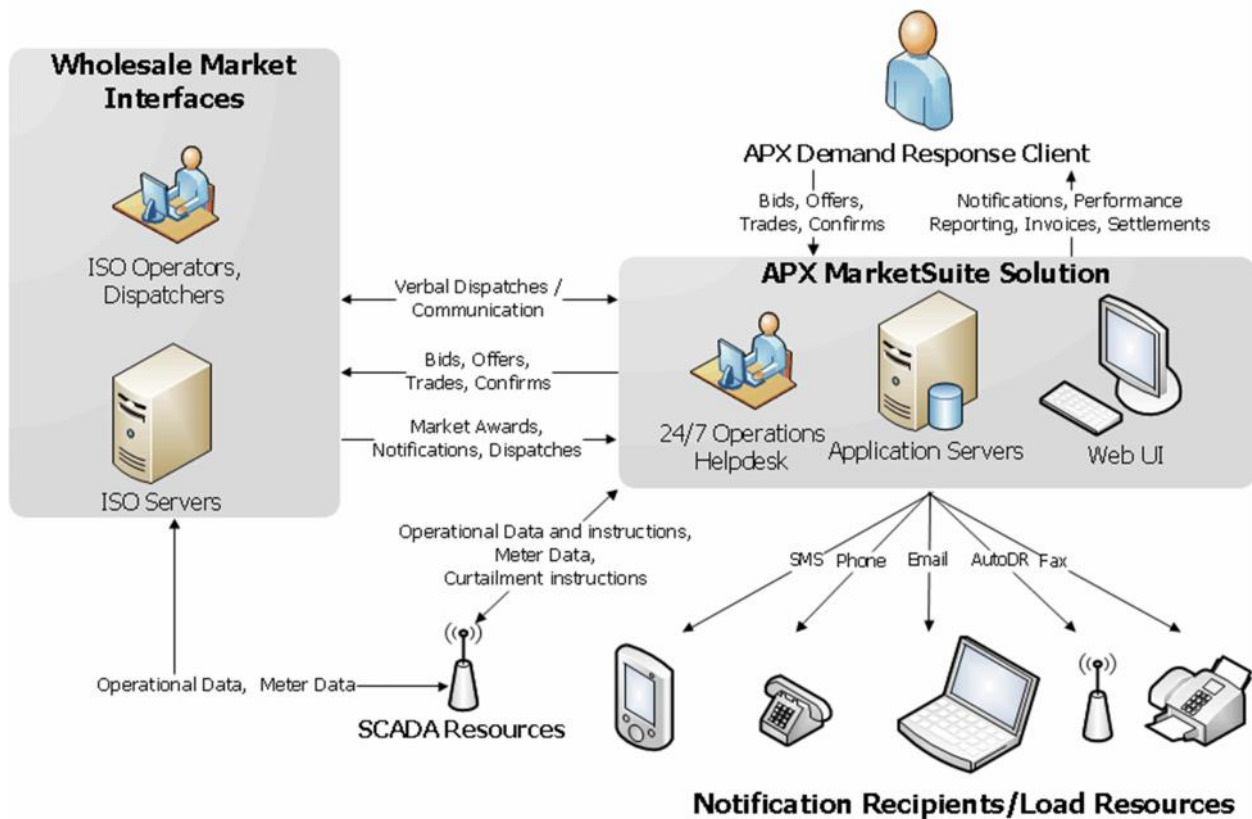
APX Helps Manage ISO Rules and Technology Requirements

Whether you are an aggregator of demand resources, or you have your own load looking to participate as resources in wholesale markets, APX has a flexible and scalable demand response toolkit which provides = integration with all North American ISOs. Let APX handle the complexities of the variation in products, participation rules, and processes from one region to another.

- ✓ Day-ahead Bidding
- ✓ Day-ahead Scheduling
- ✓ Real-time Dispatching
- ✓ SCADA Integration (if required)
- ✓ Timely Notifications (including sub-client notifications)
- ✓ Full Settlement Data Warehouse and Reporting (including customizable performance calculations)

APX Infrastructure Allows You to Participate in the Most Demanding Products

Our clients achieve the fastest dispatch and curtailment performance. This is critical when operating in the wholesale markets where program participation and compliance is measured in seconds. Many industry leading load serving entities and aggregators have been long-time partners that rely on APX to make their clients successful in maximizing load shedding revenue.



Our Unique Approach

The APX MarketSuite® Demand Response System is designed for secure and private use to facilitate real-time participation in wholesale demand response. The system is secure and accessible over the Internet. Dispatch notifications can be white-labeled and are communicated in real-time via traditional methods, as well as machine-to-machine interfaces. Settlement calculations are configurable. Easily integrate with other systems for managing registration, nominations, dispatches, and meter data harvesting. In addition to a system that is feature-rich with intuitive user-interfaces, APX delivers this solution as a Software-as-a-Service and provides 24/7 Operations helpdesk and program administration support to make implementing and operating a program easy, saving time and money.

FERC Order 745

The Federal Energy Regulatory Commission (FERC) issued Order 745 on March 15, 2011. This Order instructs each Independent System Operator (ISO) to compensate demand resources at the locational marginal price (LMP) when they reduce their energy usage when price meets economic benefit thresholds, resulting in decreased price volatility. This new compensation structure increases opportunities for demand resources to participate in the wholesale energy markets. However, Demand Response Initiatives vary by ISO as do technology and process requirements. The cost and complexity of meeting the technology and process requirements can present barriers to taking advantage of these opportunities. The text box to the right highlights key ISO Demand Response programs for which APX solutions can be used. While ERCOT does not fall under FERC jurisdiction, we've listed ERCOT's programs because they have a very active demand response market.

About APX, Inc.

APX has over two decades' experience providing hosted scheduling and settlements services for wholes markets as well as seven years' experience providing IT solutions and program administrative and helpdesk support for utility demand response programs and wholesale demand response participation.

For more information please visit www.apx.com or contact us at +1-408-517-2134

Copyright 2014 APX Inc. All rights reserved.

Demand Response Markets at a Glance

CAISO

- Wholesale market not yet active due to delays in finalizing policies.
- Strong utility retail programs.

ERCOT

- Load resources can provide ancillary services to wholesale market.
- ~450 MW of load participating in Emergency Responsive Service (ERS) program.

ISO New England

- ~800 MW participating in capacity program.
- ~300 MW participating in day-ahead price responsive market program.

MISO

- Load and behind the meter generators bid into energy and ancillary service markets.
- ~440 MW of demand response resources.
- ~6,500 MW of load modifying resources.
- ~900 MW of emergency demand resources.

New York ISO

- Load resources can provide ancillary services to wholesale market.
- ~2,000 MW of load participating in reliability programs.

PJM

- ~2,500 MW participating into energy and ancillary services markets.
- ~9,000MW participating in capacity market.

SPP

- Load and behind the meter generators bid into DA energy and ancillary service markets.

Visit www.apx.com for more detailed information about demand response markets.

2022 DRAM RFO

Scheduling Coordinator Aggregated Information Packets

Submission 3: Customized Energy Solutions



Company Name of Scheduling Coordinator: Customized Energy Solutions/Galt Power
Address of Company: 101 Parkshore Drive, Folsom, CA 95630 or 1528 Walnut St. 22nd Floor,
Philadelphia PA 19102
Contact Name: Mike McGuffin
Contact Phone Number: 916.932.7227
Contact Email: mmcguffin@ces-ltd.com



**Customized
Energy Solutions**

Scheduling Coordinator Request for Information

Customized Energy Solutions, Ltd.



**Customized
Energy Solutions**

Analyze · Simplify · Implement

CONFIDENTIAL

Scheduling Coordinator Information Packet 2022 DRAM

Analyze • Simplify • Implement

215.875.9440 • info@ces-ltd.com • www.ces-ltd.com

Company Overview:

Established in 1998, Customized Energy Solutions is an energy advisory company that works closely with clients to navigate the wholesale and retail electricity markets across the United States and globally. Serving hundreds of clients, Customized Energy Solutions offers software solutions, back office operational support, 24-hour market operations and dispatch support, and advisory services focused on asset optimization and efficiency. CES is also a third-party asset manager of just under 10,000 MWs of generation load across all ISOs in the United States, Canada and Mexico. Enabled by the breadth of services CES offers and our team's deep understanding of market structures and operations, CES empowers clients to achieve their goals by helping them navigate the evolving energy markets, complex market rules, and new energy technologies entering the markets.

CES is committed to promoting economic development through the advancement of transparent, efficient, and nondiscriminatory wholesale and retail electricity and natural gas markets. We focus on empowering our clients by sharing our understanding of the workings of the energy markets and related new technologies. CES offers best-in-class hosted energy market operations platforms and services. The company has several business lines that provide a broad range of energy services



CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM

Analyze • Simplify • Implement

215.875.9440 • info@ces-ltd.com • www.ces-ltd.com

CES has grown consistently over the past 20 years, with a current staff of 182 people, and has been recognized regionally and nationally for its impressive and sustained growth. Specific honors include repeated placement in the national INC. 500 | 5000 and Hall of Fame recognition by The Philadelphia Business Journal as a Top 100 Company in Philadelphia Hall for five or more consecutive years. CES has also established a significant presence in the Indian Energy industry with the creation and direction of the India Energy Storage Alliance.

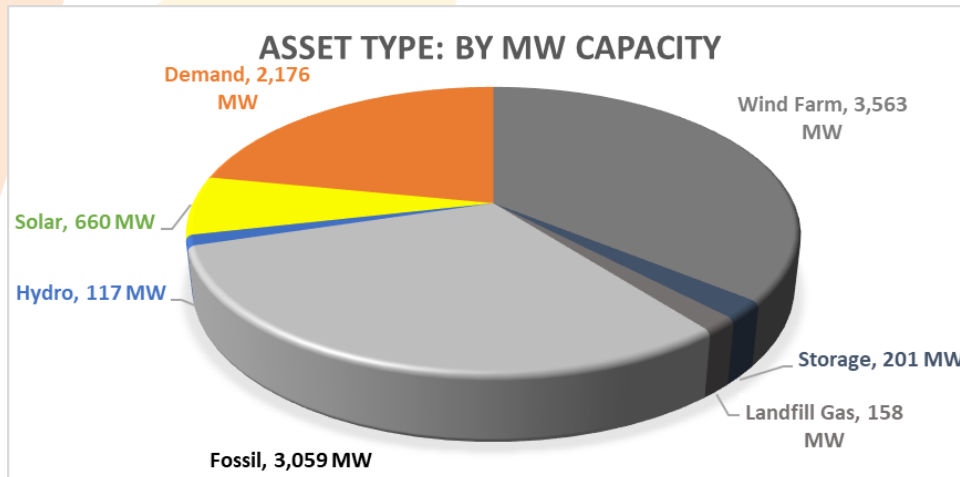
CES is a privately held Limited Liability Company registered in Delaware with headquarters in Philadelphia, Pennsylvania and satellite offices across the nation including Folsom, CA.

Qualifications and Energy Market Experience:

CES has been providing generation management and optimization services for the past ten years to developers, asset owners, municipal and cooperative entities, and large industrial customers. CES manages a diverse portfolio of generation and load assets including solar, wind, and other renewable power plants, cogeneration facilities, combustion turbines, demand response, hydro, and storage. The CES storage portfolio includes over 30 different assets totaling approximately 300 MWs of nameplate capacity.

In the California ISO (CAISO) CES has experience managing a diverse portfolio that has included dispatchable renewables (Solar and Wind), Retail Load, Demand Response, hydro, Energy Storage and one of the first DC Coupled co-located paired resource. CES maintains an in-depth knowledge of all the deregulated markets in the United States including all the facets associated with CAISO. CES has deployed Remote Intelligent Gateways (RIG) in CA for both gas fired and energy storage resources, in addition to monitoring the market participation and dispatch many units in the CAISO market. Specific references are available upon request.

A summary of the megawatts managed by CES by fuel type provided below:



CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM

Analyze • Simplify • Implement

215.875.9440 • info@ces-ltd.com • www.ces-ltd.com

CES 24/7 Market Operations Center (MOC) and Supporting Systems: CES will accomplish many of the requested services from its Philadelphia, Pennsylvania based MOC, which is staffed 24 hours a day with trained operators. The technology of the MOC includes a SCADA system used to communicate generation, load, and pricing information between all interested parties. The SCADA system connects to client sites using RTUs developed by CES and provided to the site. These RTUs can collect data from site' systems using DNP, MODBUS, and / or OPC data protocols.

CES' systems also include a licensed OSI Soft PI system for data archive and display, and can make facility data available to clients via the internet using PI displays or other data transfer protocols. CES also uses several in house data base systems to assist in tracking unit and financial data.

All systems, including lighting, air conditioning, etc., are fed by two different feeds into the building and MOC, and supported by Uninterruptible Power Supplies and on site backup diesel generation. Additionally, CES has a duplicate set of these systems at its backup site in Carmel, Indiana, for business continuity in the event of damage to CES' data center in Philadelphia. CES also has backup ICCP connections to ISO/RTOs from this site, to ensure continuity of communications in the event of circuit issues in Philadelphia.

Demand Response Experience:

CES has managed DR participation in the CAISO market since 2016 and in deregulated markets since 2004. CES offers all standard Scheduling Coordinator (SC) services including scheduling, dispatch management, settlements and invoicing, and RA compliance. CES also offers resource management and a fully integrated system to manage meter data and baseline performance calculation requirements associated with CAISO PDR market participation.

CES successfully assisted a DRP in transacting Resource Adequacy (RA) capacity on a bilateral basis outside of the DRAM.

CES works with DR providers that facilitate market participation for many different types of customers including V2G, residential, industrial, commercial, healthcare, agricultural, and manufacturing. CES works with customers who have over 500 MWs throughout the US ISO/ RTOs. We provide or facilitate market products including Emergency Load Response, Economic Load Response, and ancillary services through our 24 hour Market Operation Center. CES focuses on empowering organizations that have demand response assets to obtain the maximum value from the wholesale market. To facilitate this we offer wide ranging and flexible service to ensure that our Clients can focus on their customer experience while our market experts care of the CAISO integration.

CES's Emerging Technology group has industry leading insight into the market opportunities and operation of BTM and IFOM energy storage. Our depth of experience across markets and load response products in addition to our diverse client base, gives CES the ability to foresee and manage challenges associated with bringing your assets to market.

CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM

Analyze • Simplify • Implement

215.875.9440 • info@ces-ltd.com • www.ces-ltd.com

Demand Response Services in CAISO: Scheduling Coordinator Services and PDR Market Operations:

CES provides the following services in support of demand response programs:

- Assist with Proxy Demand Response location/registration management
- Daily Day Ahead/Real Time bid submission
- Market results retrieval/communication
- Daily calculation of resource baseline using client specific baseline methodologies
- Daily calculation of resource performance
- Daily preparation and submittal of meter data to the CAISO's MRI-S Metering system (including submission of historical meter data used to establish a baseline)
- Processing and validation of daily settlements and weekly invoices

Analytics and Data Management:

CES utilizes in house developed systems that integrate with CAISO tools (DRRS, CMRI, settlements) for market and resource information and provides interfaces to integrate with client specific systems for access to registration, location, and meter data. Services include:

- Data upload directly to CES systems for locations and meter data
- Meter data integration for multiple file types (XML, GreenButton, csv, etc)
- Aggregation of location level meter data to resource/registration level
- Baseline and performance calculations at both the Registration level and Location level (providing a location/meter level performance contribution)
- Support of multiple baseline methodology types
- Access to performance data via FTP file transfer
- User interface for viewing all client data including Registrations, Locations, meter data and performance

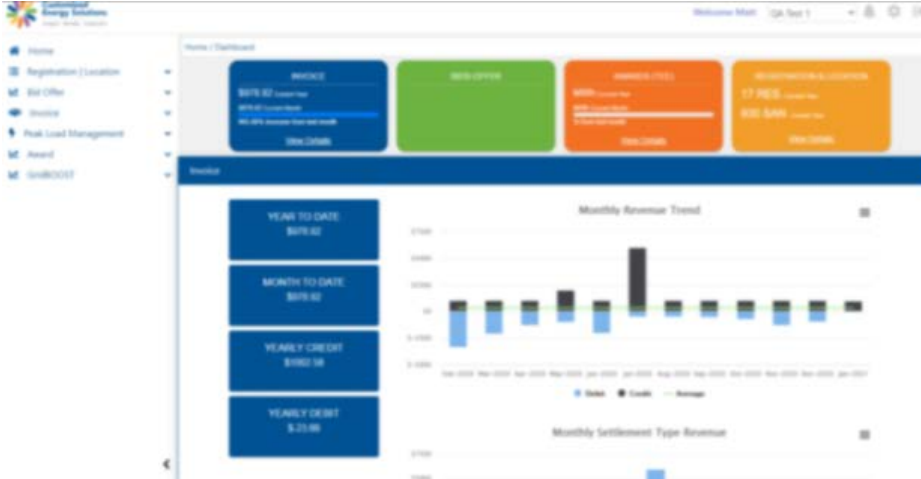
CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM

CES Resource Management Portal:

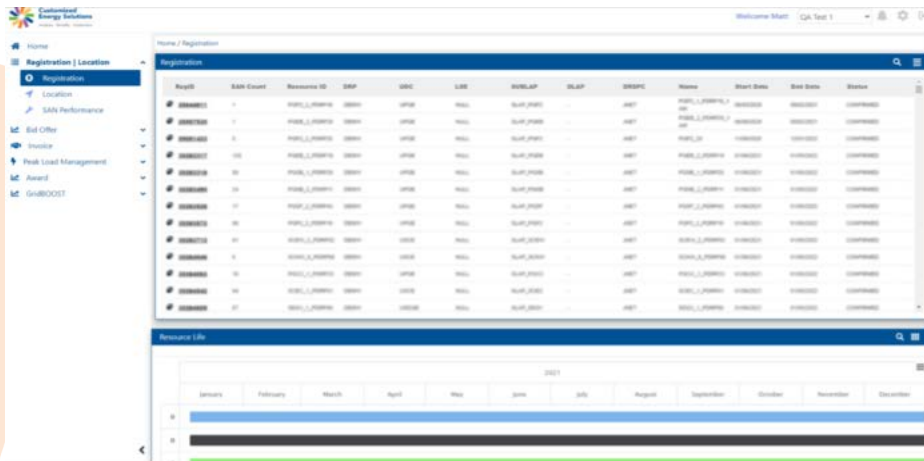
Access the data necessary your market resources with the CES Resource Management Portal which includes all data you need to operate in the CAISO market including:

Dashboard View:



- High Level CAISO Dashboard :
 - Settlement Invoice and Revenue totals for current year
 - Bids, Awards, and YTD metrics
- Registration and Location Module
 - Registration and Location attributes, relationships, meter data (aggregated)
 - Registration Performance
 - Location Level performance
- Bids and Offers Module
 - View CAISO market bid activity
- Awards Module
 - View awards from CAISO market activity
- Invoice Module
 - View CAISO settlement data for PDR Resources

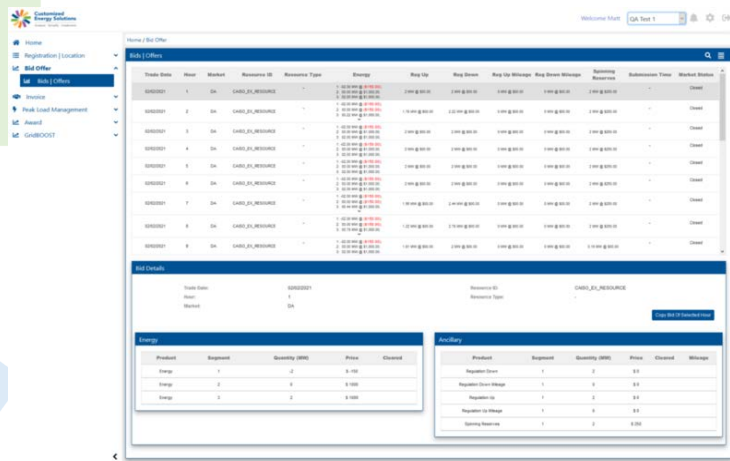
Registration/Location Views:



Awards View:



Bids View:





Information Packet for Scheduling Coordinator RFI:

Company Name of Scheduling Coordinator: Customized Energy Solutions/Galt Power
Address of Company: 101 Parkshore Drive, Folsom, CA 95630 or 1528 Walnut St. 22nd Floor, Philadelphia PA 19102

Contact Name: Mike McGuffin
Contact Phone Number: 916.932.7227
Contact Email: mmcguffin@ces-ltd.com

Are you registered to provide scheduling coordinator services? If yes, what is your SCID Number?	Yes GALT
Are you currently bidding into the CAISO Market? If yes,	Yes
<ul style="list-style-type: none"> • Are you actively bidding? • Are you bidding in Proxy Demand Resource, Reliability <ul style="list-style-type: none"> ○ Demand Response Resource, or Participating Load 	Yes
<ul style="list-style-type: none"> • How long have you been bidding into the market? actively participating in the CAISO market since 2010. 	CES has been
If not,	
<ul style="list-style-type: none"> • Have you previously bid products into the CAISO market? • If so, what products were bid in? • If so, when were these products bid in? 	N/A
Have you ever bid into other wholesale energy markets?	Yes
<ul style="list-style-type: none"> • If so, what products were bid in? 	DR Products include:
Emergency Response Service in ERCOT, Special Case Resource in NYISO, Active Load Management in PJM, Interruptible Load Response in PJM, Emergency Demand Response in PJM, Economic Demand Response in PJM, Synchronous Reserve in PJM	
<ul style="list-style-type: none"> • If so, when were these products bid in? 	2004-Present
Are you a certified woman, minority, disabled veteran, lesbian, gay, bisexual and/or transgender business enterprise (WMDVLGBTBE) Supplier?	No

CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM



Describe some of the terms and conditions under which you'd provide SC services to Sellers. For instance:

- Size Limitations (e.g. a minimum PDR size that you will schedule?)
- Min size for CAISO is. 1MWs Location Limitations (e.g. restrictions on where the PDR is located in California?)
 - CES has no limitation, however we will meet CAISO SubLap limitations
- Registration Limitations (e.g. restrictions on the number of PDR registrations?)
 - No
- Seller Security Requirements
 - Contractual agreement to pay any costs related to nonperformance
- Billing Arrangements:
 - CES will provide competitive custom pricing for the services listed above in any of the IOU service territories based on the specific needs of the customer.
- Other Terms and Conditions (additional information may be attached)
 - Please see attached marketing material

As a general matter, the SC will be required to provide the following services for each DRAM resource being bid into the CAISO market. At a minimum, the SC will need to perform the following tasks:

- Bid into the CAISO market
- Provide award information to the Aggregator/Seller
- Provide CAISO settlements to Aggregator/Seller for performance in the market
- Calculate CAISO Grid Management Charges for Aggregator/Seller
- Validate Availability of Demonstrated Capacity (including potential audit fees)
- Certify that the resource is bid at or above the Net Benefits Test (NBT)
- CES provides comprehensive end to end meter data and performance management including:
 - Download of raw utility usage data
 - Calculation and submission of SQMD
 - Calculation of baseline and performance data along with submission to the CAISO's MRI-S Metering system
 - Although not required by the CAISO, CES is capable of calculating baseline and performance data at the individual end-use account level to provide DRPs with visibility into both aggregation and individual customer performance
- Submit resource outage information to CAISO (via the Outage Management System (OMS))
- Submit requests to CAISO to change resource operating parameters in the CAISO Master File (via the Resource Data Template)
- Submit CIDI tickets to CAISO

CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM

What other services could you provide to the Seller that may be of interest (e.g. can you act as a wholesale DRP? Can you separate data within one PDR into individual Seller streams, if several aggregators have put their customers into one PDR?)

- CES provides a number of services associated with Wholesale DRP activity.
- CES will provide aggregation of customers within one PDR as long as they are all customers of one seller.
- Galt can provide metering and control equipment to customers to view usage data in real time as well as turn equipment off and on in response to ISO dispatch. We have an online portal on which customers can view their baseline for the following day based on their meter data, view and edit their program contacts and information, and view event reports.
 - CES offers low cost telemetry services for those who want to participate in the ancillary services markets at the CAISO
 - Settlements and billing services
- CES provides market entrance evaluation, operational consulting and operational support across US ISOs. Our breadth of experience will be valuable to those planning on expanding outside of CAISO

Other considerations for potential DRAM Sellers?

- CES has been providing demand response services since 2004 in deregulated markets. Since we first started providing one service in the PJM market, we have expanded our geographical reach and technical depth. We now provide Demand Response, Distributed Resource, and Wholesale service across the United States including reliability, ancillary services, retail bill management, and spot price market interaction. Our depth and diversity make CES the ideal partner for a company with a future growth mindset. Not only do we handle current operation in the CAISO PDR market we are also positioned to help you expand into new markets and new services as your company grows. Our market entrance consulting will help you understand the risks and rewards of the diverse deregulated markets. Our expert operations team will make your market entrance smooth. We are not a company with a dedicated demand response sales team, instead we focus on enabling you to provide demand response services to your customers as a trusted partner. We strive to strengthen the relationship between our clients and their customers.

CONFIDENTIAL

Scheduling Coordinator Information Packet 2021 DRAM

Analyze • Simplify • Implement

215.875.9440 • info@ces-ltd.com • www.ces-ltd.com

2022 DRAM RFO

Scheduling Coordinator Aggregated Information Packets

Submission 4:

EDF

Submitted by:



EDF Energy Services, LLC

Nathan Mancha, Director of Demand Response

nathan.mancha@edfenergyservices.com

O (281) 653-1782 F (281) 653-1427

M (713) 294-7153 AIM edfnmancha

www.edfenergyservices.com

Information Packet Template for Scheduling Coordinator Request for Information

Company Name of Scheduling Coordinator: EDF Trading North America LLC
Address of Company: 4700 W. Sam Houston Parkway North,
Suite 250
Houston, TX 77041

Contact Name: Nathan Mancha
(Director of Demand Response)
Contact Phone Number: 281-653-1782
Contact Email: Nathan.Mancha@edfenergyservices.com

Are you registered to provide scheduling coordinator services? Yes
If yes, what is your SCID Number? EDF Trading typically uses a separate SCID for each customer it provides SC services for, so the SCID may be subject to change

Are you currently bidding into the CAISO Market? Yes
If yes,

- Are you actively bidding?** Yes
- Are you bidding in Proxy Demand Resource, Reliability Demand Response Resource, or Participating Load** No
- How long have you been bidding into the market?** 2008

If not,

- Have you previously bid products into the CAISO market?** N/A
If so, what products were bid in? N/A
If so, when were these products bid in? N/A

Have you ever bid into other wholesale energy markets? Yes:
ERCOT, PJM, MISO,
NYISO, NE-ISO

- If so, what products were bid in?** Capacity, Energy, Ancillaries and Demand Response
- If so, when were these products bid in?** Actively bid/offer daily and with corresponding capacity auctions

Are you a certified woman, minority, disabled veteran, lesbian, gay, bisexual and/or transgender business enterprise (WMDVLGBTBE) Supplier? NO

Information Packet Template for Scheduling Coordinator Request for Information

Describe some of the terms and conditions under which you'd provide SC services to Sellers.
For instance:

- **Size Limitations (e.g. a minimum PDR size that you will schedule?)**
250 kW

- **Location Limitations (e.g. restrictions on where the PDR is located in California?)**
No limitations on location of asset
- **Registration Limitations (e.g. restrictions on the number of PDR registrations?)** EDF
Trading is open to varies aggregations sizes and registrations.
- **Seller Security Requirements**
This can be discussed
- **Billing Arrangements**
No specifics
- **Other Terms and Conditions (additional information may be attached)**

As a general matter, the SC will be required to provide the following services for each DRAM resource being bid into the CAISO market from June 2016 to December 2016. At a minimum, the SC will need to perform the following tasks:

- Bid into the CAISO market
- Provide award information to the Aggregator/Seller
- Provide CAISO settlements to Aggregator/Seller for performance in the market
- Calculate CAISO Grid Management Charges for Aggregator/Seller
- Validate Availability of Demonstrated Capacity (including potential audit fees)
- Certify that the resource is bid at or above the Net Benefits Test (NBT)
- Submit Meter data to CAISO
- Meter data submission
- Submit resource outage information to CAISO (via the Outage Management System (OMS))
- Submit requests to CAISO to change resource operating parameters in the CAISO Master File (via the Resource Data Template)
- Submit CIDI tickets to CAISO

Information Packet Template for Scheduling Coordinator Request for Information

What other services could you provide to the Seller that may be of interest (e.g. can you act as a wholesale DRP? Can you separate data within one PDR into individual Seller streams, if several aggregators have put their customers into one PDR?)

EDF Trading has managed a number of different types of assets from residential load aggregations to large industrials. EDFT is willing to work with Sellers to provide or develop needed services and value adds.

Other considerations for potential DRAM Sellers?

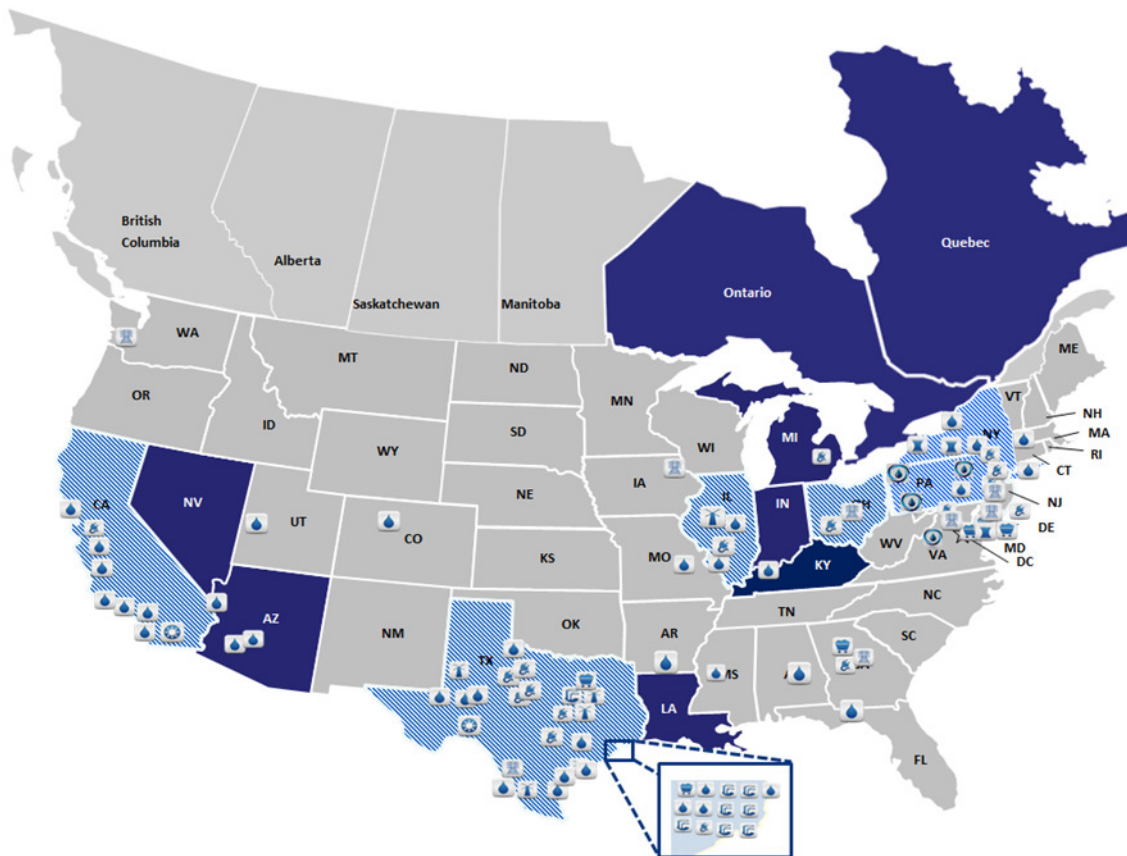
EDF Trading is an active participant in all facets of the North American markets and executes wholesale and retail energy, capacity and ancillary transactions every day for both the management of supply and the price risk optimization of customer's assets.

Provide complete this template and include any additional information that you would like to share with the potential DRAM bidders and return to DRAMRFO@pge.com. Responses are due by 5 PM Pacific Standard Time on September 10, 2015.

Information Packet Template for Scheduling Coordinator Request for Information

Appendix A North American Power Footprint

- **Manages approximately 30,000 MWs of third-party capacity with 24,000 MWs of power generating assets and 6,000 MWs of peak commercial, industrial or aggregated load**
- **Optimizes customer portfolio via term, monthly, day-ahead, and intra-day markets using physical and financial instruments**
- **Provides market access including risk management, hedging, logistical, and credit services**
- **Wide presence: ERCOT, PJM, MISO, SERC, VACAR, SPP, FRCC, NYISO, ISO NE, WECC, CAISO**



Information Packet Template for Scheduling Coordinator Request for Information

Appendix B North American Environmental Products

EDF Trading NA Renewable Team:

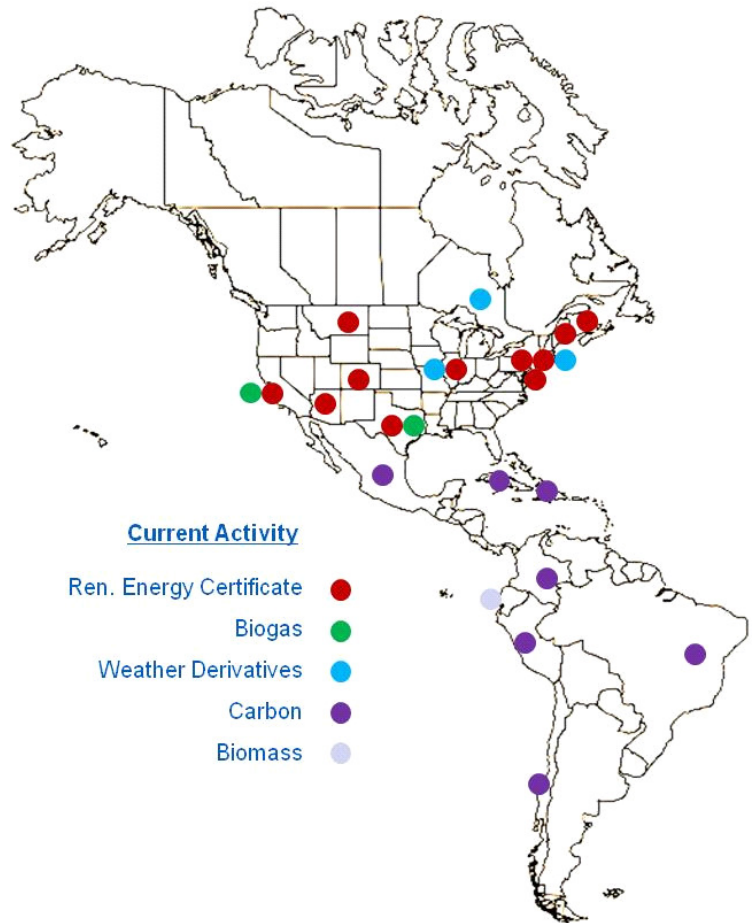
- A global first-mover in environmental products markets
- Provides clients with solutions to manage environmental assets and risks

5 Core Environmental Products:

- Carbon off-sets
- Renewable Energy Certificates (RECs)
- Biomass
- Weather derivatives
- Green gas (US specific)

Global, regional or local solutions:

- Global depth, understanding and participation
- Physical presence and key local knowledge



2022 DRAM RFO

Scheduling Coordinator Aggregated Information Packets

Submission 5:

Olivine

Submitted by:

Joseph Bourg | Director, Resource Acquisition and Development | jbourg@olivineinc.com
Olivine, Inc. | 2120 University Ave | Berkeley | CA 94704 | olivineinc.com



Olivine Response to:

2022 Demand Response Auction Mechanism (DRAM)

Scheduling Coordinator Services

February 2, 2021

SUBMITTED BY:

Joseph Bourg | Director, Resource Acquisition and Development
jbourg@olivineinc.com

(303) 717-2468

Olivine, Inc. | 2120 University Ave
Berkeley | CA 94704 | olivineinc.com





SUMMARY

Olivine is a demand response industry pioneer committed to maximizing the value of behind-the-meter flexible loads and distributed energy resources through the provision of grid services. As one of the most experienced, and first-to-market scheduling coordinators active in the CAISO markets we use our proven technologies and market strategies to capture grid services value through cost-effective integration, bid optimization and support, and customized value-added operational services to meet clients' goals and objectives. The engine behind our DRAM scheduling coordinator offerings is the **Olivine DER™ Platform**, an award-winning software platform that paves the way for distributed energy resources to seamlessly participate on wholesale energy and ancillary service markets, as well as utility and load serving entity programs and initiatives.

As an industry leader, Olivine is proud of its many "first-of-kind" projects that verify proof-of-concept and usher in new and innovate market opportunities and strategies to optimize the value of customer demand-side assets. For example, Olivine was the first third-party Scheduling Coordinator/ Demand Response Provider/ Distributed Energy Resource Provider (SC/DRP/DERP) to bid Proxy Demand Resources (PDR) into the CAISO markets, and as the longest active third-party SC/DRP/DERP in CAISO our market leadership and expertise enables us to provide the highest-value support and insights to our clients. We continue to be actively involved in stakeholder groups to define PDR and related processes, as well as other regulatory proceedings and industry working groups, and based on this experience we can provide in-depth support to clients on current market opportunities and participation requirements, as well as provide a vision of where the future market opportunities are going to arise and how to prepare for them.

Leading the way to resolve important and complex issues surrounding new and changing energy markets, Olivine has supported numerous critical initiatives such as utility pilots and independent research and demonstration projects. In fact, one of our utility pilot projects directly led to the development of the Demand Response Auction Mechanism (DRAM) program that we support today as a Scheduling Coordinator / Demand Response Provider. If you are new to DRAM and are searching for a Scheduling Coordinator/ Demand Response Provider, or if you have held a DRAM contract and want to review your SC/DRP options, please do not hesitate to contact us to discuss our highly cost-competitive and unparalleled operational support services.

CONTACT INFORMATION

Please direct inquiries to:

Joseph Bourg
Director, Resource Acquisition and Development
(303) 717-2468
jbourg@olivineinc.com

Beth Reid
CEO
(408) 759-0360
breid@olivineinc.com



RFI QUESTION RESPONSES

Are you registered to provide scheduling coordinator services? If yes, what is your SCID Number?

Olivine is currently registered with the CAISO to provide scheduling coordinator services. Our core SCID number is 7061 and we maintain additional ones to support data separation and other customer-specific requirements, as necessary.

Are you currently bidding into the CAISO Market? Are you actively bidding?

Olivine is actively bidding into the CAISO market and has been for more than ten years including Day-Ahead Energy, Real-Time Energy, Spinning Reserves, and Non-Spinning Reserves. We are currently bidding in Proxy Demand Resources (PDR) and Reliability Demand Resource Resources (RDRR). We offer both manual and automated bidding services, and we support 5-in-10, 10-in-10, and MGO baselines (for battery storage and EV charging assets). Olivine's team has also handled Participating Load previously.

Have you ever bid into other wholesale energy markets?

Olivine is currently active in other wholesale energy markets, including integration with the PJM and data integration in the New England ISO.

Are you a certified woman, minority, disabled veteran, lesbian, gay, bisexual and/or transgender business enterprise (WMDVLGBTBE) Supplier?

No.

Describe some of the terms and conditions under which you'd provide SC services to Sellers.

- *Size Limitations (e.g., a minimum PDR size that you will schedule?):* **None**
- *Location Limitations (e.g., restrictions on where the PDR is located in California?):* **None. Olivine is currently providing SC and DRP services to PDRs and RDRRs in Pacific Gas & Electric, Southern California Edison and San Diego Gas and Electric service areas.**
- *Registration Limitations (e.g., restrictions on the number of PDR registrations?):* **None.**
- *Seller Security Requirements:* **Security requirements will be based on proposed bids and if deemed necessary will be determined through consultation with client.**
- *Billing Arrangement:* **Standard billing terms for services are net 30 days with market settlement payments based on the CAISO calendar.**



DESCRIPTION OF SERVICES

In support of the DRAM program, Olivine is prepared to provide the following Scheduling Coordinator services for each resource that is bid into the CAISO wholesale market from January 2021 to December 2021. We are currently providing all of these services:

- Register resources in the Demand Response Registry System (DRRS)
- Bid resources into the CAISO market
- Provide award information to the Aggregator/Seller
- Provide CAISO settlements to Aggregator/Seller for performance in the market
- Calculate CAISO grid management charges (grid management charges for Aggregator/ Seller are calculated by the CAISO; however, Olivine manages the processing)
- Validate availability of demonstrated capacity (including potential audit fees)
- Certify that the resource is bid at or above the Net Benefits Test (NBT)
- Submit Meter data to CAISO
- Submit resource outage information to CAISO (via the Outage Management System (OMS))
- Submit requests to CAISO to change resource operating parameters in the CAISO Master File (via the Resource Data Template)
- Submit CIDI tickets to CAISO

Other services Olivine will provide

Olivine will provide wholesale DRP services for DRAM participants as well as Retail DRP services, as necessary, to support Rule 24/32 operations. Further we offer access to the full suite of capabilities in the **Olivine DER™ Platform** to assist participants in managing their contracts and resources. This award-winning, highly configurable system enables all aspects of wholesale market as well as utility-managed grid services and operational simulation while being agnostic as to the specific technology associated with the resource. It includes the capability to separate data for co-mingled/joint PDRs, to create individual Seller streams as necessary and more advanced capabilities such as real-time telemetry. Olivine also provides compliance management and invoicing services and meter data management services including data retrieval, and SQMD processing.

Other considerations for potential DRAM Awardees

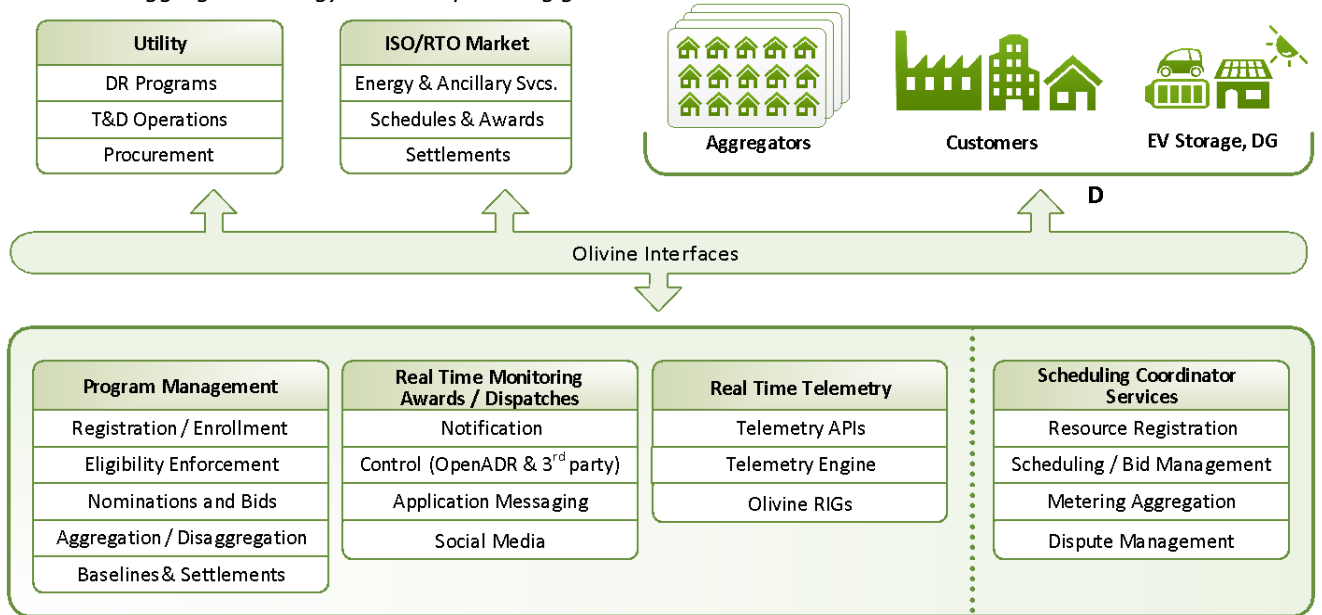
Olivine is currently working with previous DRAM awardees to deliver on their contracts and optimize the revenue streams from their resource. With our fingers on the pulse of the market, we can quickly optimize bidding strategies to capture increased wholesale market revenues in addition to our client's capacity payments. We also offer valuation services to model the impacts of available resource quantities under different bidding strategies and provide investment-grade analyses of optimization strategies to increase the value of our clients' resources.



ABOUT THE OLIVINE DER™ SYSTEM

Our award-winning, highly configurable system enables all aspects of wholesale market as well as utility managed grid services and operational simulation while being agnostic as to the specific technology associated with the resource.

Olivine offers a full suite of services to enable the integration and ongoing management of distributed and aggregated energy resources providing grid services.



Olivine DER™ Platform features include:

- Advanced extensibility and rapid modeling capabilities that allow our customers to handle new business rules, workflows, settlement tariffs and baseline algorithms with minimal effort.
- Resource management capabilities with support for flexible entity hierarchies and custom attributes to meet diverse and fluctuating business requirements, to track complex eligibility criteria, and to manage administrative and operational contacts.
- A link between retail and wholesale resources to facilitate enrollment, registration, bid optimization, award tracking, automated dispatch and telemetry aggregation for dual purpose and multi-use resources.
- Real-time aggregation and disaggregation capabilities provide extensive performance data, including metered load/telemetry, calculated or imported baselines, target load and estimated financial impact.
- Standards-compliant integration with resources for control and telemetry (e.g. OpenADR 2.0b).
- Advanced features, such as flexible event targeting (e.g., by pricing node, feeder, circuit, or bid price), automatic versioning of meter data and settlement runs for auditing purposes, multiple-window effective periods on business entities and relationships, sophisticated support for nomination schedules and a state-of-the-art authorization system.
- Real-time telemetry to support demand-side ancillary services via a software based Remote Intelligent Gateway (RIG).



OLIVINE'S KEY ACCOMPLISHMENTS & AWARDS

As the single most experienced provider in California for integrating demand-side and renewable resources into wholesale markets, Olivine has a unique and valuable expertise that's simply not available anywhere else. Some of our key accomplishments include:

- An Olivine-administered program, Pacific Gas & Electric's *Supply-Side Pilot* was named a finalist in the 2016 DistribuTech Awards for demand response and energy efficiency.
- Olivine and Pacific Gas & Electric were awarded the Peak Load Management Alliance (PMLA) Program Pacesetters award in 2019 for the Excess Supply Pilot for our groundbreaking work on load shifting programs.
- Winner of the 2015 Fierce Energy Innovation Award for the Demand Response/Demand-Side Management category for its innovative, industry-leading product, the **Olivine DER™ Platform**



- First demand-side resources to be certified and put into production in California (working with SDG&E)
- First third-party to register demand side resources as PDR in California markets
- Development and certification of the first CAISO certified software RIG (Remote Intelligent Gateway) for telemetry
- Developed a model for linking direct participation in the wholesale market to capacity payments from the utility (under PG&E's Intermittent Renewable Management Pilot) that is the basis for the current DRAM program
- First third party to provide battery storage into the California markets
- First third party to bid battery storage into the CAISO ancillary service market utilizing Meer Generator Output (MGO) baseline
- Consultant for the development of the CA Energy Storage Roadmap
- Technical integration of energy storage systems and EV fleets directly into energy markets
- Development of an operational market simulation system to enable battery storage and other resources to test their systems using real market data prior to full interconnection and integration

CONTACT US TODAY TO LEARN MORE:

Joseph Bourg
Director, Resource Acquisition and Development
jbourg@olivineinc.com
(303) 717-2468