

**COMMENTS OF ENERNOC, INC. ON CALIFORNIA ISO'S
DRAFT DEMAND RESPONSE AND ENERGY EFFICIENCY ROADMAP (JUNE 13, 2013)**

Overview:

EnerNOC, Inc. (EnerNOC) congratulates the California ISO (CAISO) on its Draft Demand Response (DR) and Energy Efficiency (EE) Roadmap (Roadmap). CAISO has assembled a very comprehensive document to clarify the role of demand response resources in California, to identify and address barriers to further demand-side resource participation in CAISO's models and to address future resource needs. Perhaps most importantly, this document can be used by the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) to develop a statewide and unified vision of the role of demand-side resources as part of California's energy future. With a unified vision, all agencies can use the same assumptions for forecasting, planning and implementation.

EnerNOC agrees that DR and EE can be valuable and important resources for addressing a variety of operational needs of both the CAISO and the investor-owned and public utilities. EnerNOC also appreciates that the needs of the system are changing and resource requirements will need to change to address the changing needs of the system. The loss of the San Onofre Nuclear Generating Station (SONGS) and the increase of renewable resources create some unique stresses to the system that need to be managed in a responsible manner. Certainly, DR, alone, is not the singular answer for replacing a base-load resource and DR, alone, will not be adequate for addressing flexible resource needs. However, EnerNOC is confident that DR and EE can be a part of the solution.

EnerNOC has participated in CAISO's Roadmap Workshop on May 13th and submitted comments on the first draft roadmap on May 28, 2013. The second draft of the Roadmap is significantly improved from the first draft in several respects. First, EnerNOC agrees that the organization of the Roadmap is an appropriate way to examine and analyze DR resources: load reshaping, resource sufficiency, operations and monitoring. Second, CAISO incorporated specific action items and timelines associated with each category. The Roadmap has been modified to incorporate stakeholder comments and reflects many of the comments and concerns that EnerNOC has identified as important to address in order to clear a path forward for DR participation in CAISO and to clarify the role of DR, as between wholesale and retail applications.

However, with that said, EnerNOC has some over-arching and specific comments to make relative to the Roadmap for consideration by the CAISO and also by the CPUC and the CEC.

Over-Arching Comments:

Preserving Existing Resources:

While we are transitioning toward a new DR regime in CA, it is important not to lose the resources that have been developed over years with ratepayer funding, with customer, utility, aggregator investment and Commission support. Clear market rules and clear transition periods are important so as not to cause disruption and disenfranchisement where, previously, there was support.

Economics:

Creating regulatory requirements for resource availability is one way to ensure that the CAISO has adequate resources available when, and where, needed. However, regulatory requirements without

adequate revenue streams from energy, ancillary services or capacity payments, will either fail to provide adequate incentives to participate in the CAISO's markets or will create short-lived resources. In CAISO's First Quarter 2013 Market Issues and Performance Report (Report), May 29, 2013, the Report calculates the average marginal energy prices over the course of the last 12 months. The on-peak average marginal energy prices, over the last year, was less than \$50/MWh.¹ The off-peak average marginal energy prices, over the last year, was less than \$40/MWh.² The Report goes on to show that real-time energy prices rarely exceed \$250/MWh, less than 2% of the time.³ DR resource opportunities for aggregators, like EnerNOC, in CAISO include Proxy Demand Resource (PDR) for energy and non-spinning reserves and, soon, Reliability Demand Response Resource (RDRR) for energy. That means that the opportunity for DR to participate economically, it would have to exceed the net benefits test (NBT), which is approximately \$50/MWh. In many hours of the year, it would not be economic for DR to participate in the CAISO energy market.

The criterion under which DR resources would qualify for resource adequacy (RA), if they participate in the wholesale energy market, are unclear at present, although the Roadmap identifies that issue as one that will be addressed by CAISO and probably the CPUC through the RA Proceeding (R.11-10-023) or an upcoming DR Docket. DR resources would need to qualify for RA in order to receive a capacity payment from a load-serving entity (LSE). The last RA Report for 2011 shows RA capacity valued, at the 85th percentile, at about \$4/kW-month or about \$48/kW-year. The median value of RA capacity was about \$2/kW-month or about \$24/kW-year.⁴ Capacity prices in PJM have cleared significantly above these prices and existing DR contracts also provide better capacity payments than this.

Lastly, DR can participate in the Western Electric Coordinating Council (WECC) as a non-spinning reserve resource, but cannot participate as a spinning reserve resource and cannot provide regulation, as it can in PJM, the Midwest ISO and other organized ISO markets. There are two barriers to making progress on this front. One is getting a resolution through WECC that recognizes the eligibility of DR resources to provide spinning and regulation reserves and the other is the telemetry requirements. Other ISOs/RTOs do not require telemetry to participate as a spinning or a non-spinning reserve resource. Telemetry is only required for regulation. While the CAISO is exploring alternative telemetry solutions, in the interim, this represents a barrier.

So, of the three products, energy, capacity and ancillary services, that could be revenue streams for DR, there are problems with all three in providing adequate revenue streams for participation. EnerNOC acknowledges that this is not a unique problem for DR, and that other resources have these concerns as well. However, since DR resources are not, per se, energy producing resources, that operate 8,760 hours per year, it is important to have capacity payments that provide the right incentive for load to be available when needed especially if energy prices are low and ancillary service market opportunities are limited. EnerNOC reserves judgment at this point as to whether the Joint CPUC/CAISO Multi-Year Forward Resource Adequacy Proposal addresses the aforementioned capacity concerns.

Nodal Model:

¹ Report at p. 8.

² Id.

³ Id. at p. 11.

⁴ Energy Division 2011 RA Final Report, February 5, 2012, pp. 21-26.

DR resources must bid in as energy on a sub-LAP basis under either the PDR or RDRR models. EnerNOC would like the CAISO to reconsider if that design is really necessary. There are 23 sub-LAPs within CAISO's system. There are 10 local capacity areas (LCAs), which is the basis determining local resource adequacy requirements. Of the 10 LCAs, 6 are in PG&E's service territory and, for RA purposes, LSE's only need to demonstrate local resource procurement in order to comply with their RA requirements in two LCAs: Greater Bay and all other LCAs combined. In several of these LCAs, there are adequate resources to meet demand and no shortfalls of supply exist that warrant more granular delivery of DR resources. Pricing variations tend to be small among most sub-LAPs. Allowing DR to be bid into the CAISO across a larger area provides aggregators with greater numbers and variety of customers and load profiles for portfolio management. Therefore, if this construct serves no real meaningful purpose for price differentiation or to meet a local constraint and local delivery can be accomplished on an LCA basis, as is required for RA purposes, why continue to require DR to bid on a sub-LAP basis? This is further complicated by the development of flexible capacity requirements that reflect a system need, but, for DR resources, would have to be provided on a sub-LAP basis. If the need is a system need, why does DR have to perform on a much more granular basis than necessary?

The CAISO's design has driven retail contract design as well. On top of a small geographic delivery area, some of those contracts include large penalties for performance shortfalls. In addition, baseline calculations, in many instances discourage participation or fail to credit customers with the actual reductions they have provided. In combination, these "attributes" discourage customer participation through limiting aggregation, onerous penalties and failure to acknowledge customer responses. It is important to examine current constructs and whether those constructs encourage or discourage DR participation.

Specific Comments on the Roadmap:

Load Reshaping:

The distinction between load-modifying, or load-reshaping resources and supply-side resources is an important one. Certainly, not all demand resources are the same. Certain retail programs rely upon voluntary responses of consumers to prices or signals. Other programs may be voluntary, but with significant repercussions for a failure to respond. EnerNOC does not view its contract obligations to the utilities to deliver demand reductions upon notification as voluntary responses. Failure to perform to a specified level more than a couple of times could be grounds for an event of default and could provide the utility with an opportunity to terminate the contract. That is a result that EnerNOC will go to great lengths to prevent, and said differently, EnerNOC will go to great lengths to ensure performance of its resources.

However, maintenance of a retail program option, until the many issues identified in the CAISO's Roadmap are resolved for wholesale market participation is paramount. In fact, some of those retail programs may permit bidding of that resource into the CAISO's PDR or RDRR. Said differently, maintaining retail options may actually facilitate wholesale market participation in the near term as IOU's will be able to bid into CAISO because the capacity payment issue is not as important to the IOUs as it is for the non-IOU DRPs. The IOUs just need to be able to count resources toward their RA requirement, whereas non-IOU DRPs would need a capacity payment, which IOUs would only be willing to pay a market rate for and only if it would count toward the IOU's RA capacity requirement.

The CAISO makes a very clear distinction as to what constitutes a load-modifying resource and a supply resource. If the resource is “seen and optimized”⁵ by CAISO, it is a supply resource, otherwise, it is a load-modifying resource. It is important to know and understand the amount of visibility that is required by the CAISO in order for the resource to be considered to be “seen”. PJM dispatches DR and “sees” the response on its screens monitoring demand. Yet, PJM does not have “real-time” visibility into each and every resource that responds to the dispatch. However, PJM values demand response resources despite not having that individual customer visibility. PJM doesn’t know until well after 30 days beyond dispatch what the actual performance was. Therefore, this issue of what is “seen” and controlled by the CAISO needs some additional work and clarification as to what exactly that means.

The Roadmap then goes on to identify a way in which load modification could be accomplished by sending system conditions or prices directly to a customer device, without an intermediary.⁶ There are a few confusing aspects to this position. First of all, if a device is responding directly to a system condition of the CAISO, it is unclear why it is considered load-modifying as opposed to a supply resource. But, secondly, it is unclear why that signal must be sent directly and could not be sent through an intermediary, such as EnerNOC, or a utility. EnerNOC sees no reason why it could not receive and transfer a system condition signal to a customer and why the customer must receive that signal directly from the system. Likewise, EnerNOC does not see why PG&E or SCE or SDG&E could not be the recipient of a similar instruction from the CAISO and dispatch accordingly. EnerNOC does not believe that CAISO has to go directly to each customer in order to affect a dispatch of the resource. If that is not the CAISO’s intent, then EnerNOC would request that section to be clarified. The path of the signal should not be determinative as to how or whether a resource can be counted or not.

As discussed at the CEC IEPDR Workshop, automation, alone, does not obviate the need or value of aggregators. First of all, an aggregator would reduce the number of direct resource touch points with the CAISO as customers would be aggregated to a resource level. Secondly, automation does not always translate into increased reliability. Customers disconnect, over-ride or otherwise interfere with automation that may make the amount of response less predictable. Aggregators can manage the variability in customer response, even with automation.

Nonetheless, CAISO’s proposal represents a change to the CPUC’s current approach, which differentiates between different types of DR, based upon dispatchability, as to whether it is reflected as an adjustment to load or as a supply resource. Therefore, certainly, the CPUC should be involved in any change to the definition and treatment of DR resources as part of the RA Proceeding.

If the operations of the system changes as predicted by CAISO for ramping needs, the ability to modify the load shape is an important way to manage that need, as opposed to simply adding resources. There will be many ways to modify the load shape, some of which may be permanent, but no less beneficial. Some of those changes include changes to rates, educating customers, as well as automated responses and active demand management. It is premature to judge which are and are not acceptable forms of load modification. This issue should be explored more fully by all of the agencies.

Resources:

Inter-agency Coordination:

⁵ Roadmap at p. 7.

⁶ Id.

EnerNOC fully agrees that the forecasting and planning processes to identify resource needs must be fully coordinated among the CPUC, the CEC and the CAISO and based upon the same information and expectations for future growth for demand-side resources. While resource planning should be based upon realistic expectations of load growth and, therefore, projections for future resource needs, the forecasts and plans should also incorporate some reasonable sensitivity for unknown future developments. For example, several identified action items on the roadmap, whether on the load or resource side, will produce unknown effects to future load shapes, load response or supply options. A conservative approach would be to assume no affect on resource needs over the next 10 years as a result of the Roadmap; but, that would not necessarily be realistic. Because resource decisions will be based upon those assumptions and the resource decisions could either make room for or override the need for preferred resources, the assumptions, in many ways, will drive the results.

Secondly, it is a little unclear as to which agency is the lead agency driving the policy development on certain issues. It is clear that, for example, the CAISO's studies and analyses are necessary inputs into the long-term procurement planning process (LTPP) and the RA proceedings. However, it is also clear that the CPUC will be examining those inputs and making policy determinations and providing direction to parties about how to proceed. While this can be a hand-in-glove coordinated process, it is important that one entity doesn't procedurally get in front of the other and, in essence, pre-empt the policy process. For example, the CAISO has a must-offer obligation process that has begun for flexible RA capacity resources before the CPUC has determined the requirements for preferred resources to be considered flexible.

Resource Adequacy:

EnerNOC agrees that the issues around DR counting for resource adequacy need to be resolved. It is important to understand how DR will count for local reliability as well as how DR participation in the wholesale market could count for RA. EnerNOC looks forward to the report that the CAISO and SCE are working on to "map" DR capabilities as an input to resolving these issues and agrees this issue should be included in the 2014 RA Docket.

EnerNOC looks forward to participating in the processes to develop a multi-year RA requirement and the CAISO's market-based CPM replacement mechanism. Obviously, having certainty around the rules for resources to qualify for RA is a necessary prerequisite to developing a multi-year forward commitment to provide a service or product or a willingness to pay for a service or product.

Operations:

CAISO has identified some key operational aspects of DR participation and expansion into the wholesale market.

Rule 24:

Certainly, progress is being made to advance the Rule 24 proceeding to a conclusion at the CPUC. It is possible to have the case submitted to the Commission for an action to modify Decision 12-11-025, and to adopt a Rule 24 tariff and forms by the end of the year. However, there are certain other actions that would need to occur before participation in the wholesale market could begin as a result of that Commission action. The IOUs would need to file their fees for facilitating DRPs and customers with

wholesale market participation and the IOUs have said that they will require six to nine months to implement system changes. It is more likely that we are still somewhere between one-to-two years away from bundled customer participation in the wholesale market on that basis.

Pilots:

EnerNOC is aware of an effort by some of the IOUs to solicit participation in a pilot for DR flexible capacity resources that could happen by the end of this year. As with any pilot, the devil is in the details as to the size, duration and terms of the pilot. However, the timeline for the CPUC to develop a flexible capacity pilot and a pilot for local operational needs seems to be ahead of when the CAISO will have catalogued the DR capabilities that will feed into the 2014 RA Proceeding.

EnerNOC agrees that it is important to identify which, if any, of the existing DR programs are candidates for wholesale market participation, as well as what would be required by the IOUs to make that happen, alongside identifying those resources that will be load-modifiers.

Registration:

While EnerNOC has not participated directly in the CAISO's DR models, it is acutely aware of the IOU's experience to do so and the difficulties with the registration process. 6-months to do a network mapping update of a load resource is not atypical of the time required by other markets; but, certainly represents a significant time delay to customer participation. In fact, customers will come and go as resources sometimes before the mapping is completed. Making the process easier would be a significant improvement. This is a significant difference between generation resources and DR. Once a plant is in the ground, it will stay there until it is retired. Customers not only decide either to participate or not in DR programs, they change aggregators or change locations frequently. Being able to accommodate that change is important.

Telemetry:

Telemetry requirements for anything other than regulation are onerous, even that can be accomplished with certain smart meters. Working through this issue, not only at the CAISO level but to ensure that there is support from WECC, is critical. Otherwise, this is a barrier to DR participation in the wholesale market. Period.

CAISO Models:

The Roadmap indicates that RDRR may be operational by mid-2014⁷ and that there are other DR participation "models" including Participating Load (PL) and Non-Generating Resources (NGR), which is essentially a regulation service for storage, primarily. Both PL and NGR require the DRP (demand response provider) and the LSE to be the same entity. EnerNOC is not, and does not intend to become, a LSE. Therefore, the only options available to EnerNOC to participate in CAISO will be PDR and RDRR, once it is approved by FERC and implemented by CAISO.

MOO and SCP:

⁷ Roadmap at p.

The CAISO has begun a process to define must-offer obligations (MOO) for flexible RA capacity resources. It is not clear to EnerNOC that process can define FRACMOO for preferred resources in advance of the CPUC defining the operational characteristics in order for preferred resources to qualify as flexible resources. The same is true for any must-offer obligation for preferred resources relative to local of system RA. Therefore, it is not clear that the CAISO can implement a MOO absent the CPUC's determination of what that should be.

Making DR capacity easy to transact is important, just as it is for any capacity resource. Development of a standard capacity product (SCP) may be the way to accomplish market transactions. However, SCP will be dependent upon development of the resource requirement definitions by the CPUC, the MOO by the CAISO; so, the timeline should reflect that. Secondly, it is not advisable to comingle the resource requirements into a single SCP. Flexible capacity resource requirements will likely be distinct from system peak and local capacity resource requirements.

Monitoring:

Monitoring is obviously going to be an important part of wholesale market participation. It will be important to evaluate what is being successful and why as well as what is not being successful and why. Being able to systematically review and modify, when necessary, the designs of programs based upon experience is very important. It is almost certain beyond a doubt that we won't get it right the first time and we should not rush to judgment based upon initial experience. This should be viewed as a laboratory and experiment.

Evaluation of resource performance is going to be dependent upon the measurement methodologies that are used. The CAISO has a 10-in-10 day baseline methodology with a +/-20% day-of adjustment. The measurement and evaluation will be performed on a resource, not individual customer, basis. This methodology was consistent with the CPUC's baseline methodology adopted in D.xx-xx-xxx. In D.12-04-045, the Commission modified that baseline calculation for certain retail programs, including the Capacity Bidding Program (CBP) and the aggregator contracts to a 10-in-10 day baseline with a +/-40% optional day-of adjustment. EnerNOC recommends revisiting the CAISO methodology for a couple of reasons:

1. It is clear that the baseline does not accommodate all customer types. This was expressed clearly by the Navy and UCSD at the CEC DR Workshop on June 17th. In order to make DR participation more inclusive, it will be necessary to re-examine why one baseline may reduce DR participation.
2. The methodology adopted assumed DR would be triggered primarily as a summer peaking resource. Flexible capacity resources will not be triggered based upon high system or local demand resulting from hot temperatures, but on the daily cycles of wind and solar generation.
3. It is also possible that weekend and holiday availability may be desired, whereas those days have typically not been days in which DR resources have been available. How weekend availability affects baselines relative to weekdays should also be explored. Since EnerNOC serves commercial and industrial customers, it is not clear how much load would be available to be reduced on weekends and holidays.

CONCLUSION:

The CAISO has done an excellent job identifying issues that will require work, cooperation and resolution by it, the energy agencies of the State and the stakeholders. The CAISO has organized the document to

appropriately frame the issues that require resolution by the various parties. Obviously, there is still a lot of work that needs to be done and a lot of details that will need to be filled in underneath each of these categories. EnerNOC's comments are intended to be constructive and indicate a desire to work with the CAISO, the CPUC, the CEC and interested parties to provide a clear path forward for DR resource participation in California.