

California Energy Commission

Re: Docket Number: 12-IEP-1A

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**DOCKETED**  
**12-IEP-1A**

TN # 68767

DEC 03 2012

## Clean Coalition Comments on the Draft 2012 IEPR Update

Valerie Seymour  
Policy Associate  
valerie@clean-coalition.org  
(949) 300-4715

Kenneth Sahm White  
Director, Economic & Policy Analysis  
sahm@clean-coalition.org

2 Palo Alto Square  
3000 El Camino Real, Suite 500  
Palo Alto, CA 94306

December 3, 2012

## *Introduction*

The Clean Coalition is a California-based nonprofit organization whose mission is to accelerate the transition to local energy systems through innovative policies and programs that deliver cost-effective renewable energy, strengthen local economies, foster environmental sustainability, and enhance energy security. To achieve this mission, the Clean Coalition promotes proven best practices, including the vigorous expansion of Wholesale Distributed Generation (WDG) connected to the distribution grid and serving local load. The Clean Coalition drives policy innovation to remove major barriers to the procurement, interconnection, and financing of WDG projects and supports complementary Intelligent Grid (IG) market solutions such as demand response, energy storage, forecasting, and communications. The Clean Coalition is active in numerous proceedings before the California Public Utilities Commission and other state and federal agencies throughout the United States, in addition to work in the design and implementation of WDG and IG programs for local utilities and governments.

## *General Comments*

The Clean Coalition would like to thank the Commissioners and staff for the opportunities to participate throughout the year in workshops on the topics covered in the 2012 IEPR Update. These events were comprehensive, informative, and clearly taken into serious consideration during the drafting of this report. Many of the topics discussed and debated are addressed in this draft report and advanced in a significant way. Among those key topics are the effects of climate change on our energy system, the need for greater transparency and planning in distribution grid upgrades, and the creation of renewable energy zones.

One important topic discussed at length in the workshops, but missing from the Draft IEPR is the creation of soft targets for distributed generation (DG) by county and the methodology behind those targets. Numerical targets are important in assessing progress, even if they are soft and subject to ongoing discussion and refinement. We support the staff's proposals and would like to see the targets added to the 2012 IEPR or an explanation of why they were not included at this time.

As mentioned in the summary of the interconnection meeting held on May 14, 2012, the Clean Coalition is working on multiple demonstration projects of high DG penetration combined with intelligent grid (IG) features that maintain or improve system reliability. These projects are known as

DG+IG systems. We are currently modeling control methods in several locations and working with software suppliers to add needed capabilities. As these programs come online and begin analyzing results, we look forward to sharing lessons learned and best practice suggestions with the energy community. We agree with the consensus that such results should be shared to reduce duplicative studies and shorten adoption times. It will be enlightening for everyone from homeowners to academics to see functioning DG+IG systems in action.

### *Electricity and natural gas demand forecast*

Considering climate change in the demand forecast for the first time is a commendable and important step, and hopefully an example that will spread through other states and planning regions. A more thorough inclusion in the 2013 IEPR of the wide range of possible impacts will provide a more realistic basis from which to make energy decisions.

The Governor's goal of having 1.5 million electric vehicles (EVs) on the road by 2025 should also be included in the next iteration of these forecasts. It should be considered to some degree in all scenarios, with at least some of the scenarios using the cars strategically for ancillary services and their capacity for grid-balancing and integration of renewables, as opposed to counting them as a simple load to be met by conventional means. Small fleet tests of EVs in the PJM market have proven their ability to provide high speed regulation services, realizing an open market value of \$3000 per vehicle per year. Such integrated IG capacities can speed the adoption of EVs while offsetting the need for new facilities to accommodate them.

### *Renewable Action Plan*

As recommended by the Commissioners, we are highlighting those action items in the Renewable Action Plan considered to be highest priority, although many of the others are also essential to the energy future we hope to build for California. The topics discussed below are the most relevant to the efforts of the Clean Coalition because they are clearly defined, accomplishable goals that will pave the way for many further developments and refinements in renewable and local energy. They can also be accomplished now, without the need to wait for intermediate action or future technological development.

- **1 & 2) Renewable Energy Development Zones**

As mentioned in previously submitted comments, we strongly support the renewable energy development zone concept and are encouraged by its prominent inclusion in this report. The timeline for completion in 2014, considering the numbers of agencies to coordinate with, appears aggressive, but achievable. As the focus is shifted to these zones, rather than counties or cities, targets should be established and published for each. Even if these remain soft targets, as discussed in the May 10<sup>th</sup> workshop, they provide an important yardstick by which to gauge progress and a framework for focusing attention and resources.

- **3) Looking beyond 2020 to a future with at least 40-50% renewables**

The Clean Coalition is pleased to see the inclusion of longer-term planning. In addition to the 2030 analysis, the Commission should also look at how an 80-100% renewable California could be achieved. Since the staff report is not scheduled for completion until 2014 and will be looking out at least to 2050, a higher target than 50% should be discussed, even if it is not immediately adopted. As mentioned in the actions list, the 2050 goal of reducing 1990 emission levels by 80% must be planned for now, and this will not be possible without much higher inclusion of renewables. Increased reliance on renewable resources, including local generation, increases the long-term physical and economic security of our energy supply. Additionally, for planning purposes it would be useful to specify whether the completion date for this item will be the beginning or end of 2014.

- **8) Transportation and Clean Electrification**

Electrifying California's transportation system, and thereby showing the way to a massive world-wide shift in transportation fuel, is a crucial element of a renewable energy future. The transition is complex and will require coordination between manufacturers, marketers, policy makers, and infrastructure upgrades. Getting this transition right the first time is essential since the time frame is short to meet emissions requirements and avert the worst effects of climate change. Additionally, the vehicles, charging infrastructure, and energy balancing technology must all mature simultaneously. Therefore, significant focus should be placed immediately on "vehicle-to-grid" capabilities. Since a fully

electrified transportation system will have a massive effect on demand and supply, we need to ensure that effect complements existing usage patterns, rather than exacerbating the situation. Charging during times of high wind and low consumption, as suggested in the IEPR, will have many benefits including lower bills for car owners, stability and income for wind farm operators, and additional capacity during peak hours if these batteries are available to grid operators.

A recent publication from Nissan indicates that Japan understands and is embracing the resilience made possible by EVs.<sup>1</sup> They are now building home charging stations that provide energy to the house from the car during power outages or other emergencies. This is a potentially game-changing level of distributed resilience that can counter-act otherwise massive outages, saving lives and money. In addition, as noted above, EVs have already been shown capable of providing high-speed regulation services worth \$3000 per vehicle per year. Such integrated IG capacities can speed the adoption of EVs while offsetting the need for new facilities to accommodate them.

- **12) Distribution Planning Process & 13) Disaggregate the CEC demand forecast**

The Clean Coalition strongly supports transparency in distribution planning and more detailed insight into localized demand patterns. The fact that location matters in generation decisions has been a focal point for us and we are pleased to see the ever-increasing appreciation of that reflected in actions such as forecasts with greater granularity.

As stated in action 12, the first step “is to identify a forum to better understand how each utility does distribution planning”. No date or further specification are given, but this can and should be accomplished within months since it does not require utilities to change their procedures, but simply compile and share them.

To facilitate rapid progress toward transparent planning for distribution system development and modernization, California should start with the most simple and pressing actions and proceed to the complete, coordinated vision that will ultimately create maximum benefits:

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<sup>1</sup> [http://www.nissan-global.com/EN/NEWS/2012/\\_STORY/120530-01-e.html](http://www.nissan-global.com/EN/NEWS/2012/_STORY/120530-01-e.html)

1. Publish more complete existing grid statistics and capacities (improved interconnection maps and searchable databases, including utilizing information from smart meters) and report on how modernization planning is being addressed.
2. Create and publish a plan for each region with anticipated upgrades and preferred DG locations.
3. Issue a coordinated, multi-agency state vision, state-wide standards for upgrade plans, and create a public input process.

The Distribution Planning Process should be a transparent process in which the utilities present their development plans to the public and are held accountable for investing in ways that most benefit consumers while preparing our infrastructure for future energy opportunities and demands. PG&E's three-year 2014-2016 budget includes a capital investment of \$5.47 billion to upgrade and expand electric distribution facilities, plus operations and maintenance (O&M) spending of \$1.93 billion for the distribution system. With this kind of money on the table, everyone would benefit from IOUs stepping back, creating a plan, then building deliberately for the future distribution grid. By anticipating advanced capabilities from the beginning, future upgrades and new technology will be easier to incorporate and more cost effective for consumers, developers and the State.

A recent publication from Southern California Edison reflects the growing acceptance of the need for this type of planning. SCE's report from May of this year on "The Impact of Localized Energy Resources on Southern California Edison's Transmission and Distribution System"<sup>2</sup> concludes that transmission and distribution system upgrade costs for compliance with the Governor's 12,000 MW goal will be cut by dramatically if grid upgrades are made based on a 'guided' planning process, reducing transmission upgrade costs alone from \$3.2 Billion to \$1 Billion. The report notes further "Additional benefits of adding LER [local energy resources] in the load centers include the ability to relieve future congestion of the bulk power transmission system and reduce some of the power demand on the distribution system during peak periods."

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<sup>2</sup> "The Impact of Localized Energy Resources on Southern California Edison's Transmission and Distribution System" (May 2012)

- **15) Advanced Inverter Functions**

The Clean Coalition fully supports the creation of a working group to incorporate requirements for autonomous inverter functionalities into California's interconnection procedures. We encourage this working group to quickly move beyond the academic stage towards actual deployments of smart inverter capabilities in California. Many studies and simulations have been performed that extol the virtues of smart inverters (including DOE's SEGIS, NREL/SCE, and EPRI). EPRI's report titled "Advanced Voltage Control Strategies for High Penetration of Distributed Generation"<sup>3</sup> utilized advanced grid modeling to conclude that simply by enabling autonomous volt/var control, PV penetrations can be increased by 25-100% in a given distribution circuit.

The time has come for full-scale deployments of these technologies, which can inform the working group of potential real-world issues better than additional simulation studies. With minimal upgrade costs, real-world testing could be employed on existing large PV systems with smart-capable inverters, thereby lowering capital expenditures and lead-time for the IOUs to begin pilot studies. As the Commission is aware, advanced inverter functions including controlled ramping, frequency regulation, and voltage support are already being utilized in Japan, Germany, and other European countries. Given this existing knowledge and experience around the world, the suggested timeline of 3 years before local generators can provide ancillary services to the ISO seems excessive and a shorter period should be considered. Under FERC Order 755 the California ISO is already scheduled to implement an open market for regulation services mid 2013; inverter-based regulation, which is dramatically more fast-acting and responsive than conventional sources, should be able to participate without delay.

- **Strategy 5: Research and Development and Financing**

Ongoing funding of R&D, as covered in multiple action items under strategy 5, is strongly supported by the Clean Coalition. The CEC's Community Scale Renewable Energy and EPIC funding programs are excellent examples of the Commission's leadership in supporting emerging technologies and will likely produce invaluable benefits for the state and for renewable industries.

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<sup>3</sup> Smith, J. "Advanced Voltage Control Strategies for High Penetration of Distributed Generation. Emphasis on Solar Photovoltaic and Other Inverter-Connected Distributed Generation." EPRI Technical Update. December 2010. [http://my.epri.com/portal/server.pt?Abstract\\_id=00000000001020155](http://my.epri.com/portal/server.pt?Abstract_id=00000000001020155)

We thank you for your time and dedication and look forward to continuous progress in local, renewable energy generation in California.

*Valerie Seymour*

*Policy Associate at the Clean Coalition*