

# DOCKET

11-IEP-1A

DATE Dec.23 2011

RECD. Dec.27 2011

BEFORE THE CALIFORNIA ENERGY COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Lead Commissioner Draft  
2011 Integrated Energy Policy Report  
Publication No. CEC-100-2011-001-LCD  
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**Comments by EDF on Lead Commissioner Draft**  
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**I. INTRODUCTION**

Thank you for the opportunity to comment on the Lead Commission Draft of the 2011 Integrated Energy Policy Report (herein “draft IEPR”). Environmental Defense Fund (EDF) is a leading national nonprofit environmental advocacy organization representing more than 700,000 members across the country, including more than 100,000 in California. The comments here are based on the experience gained to date through our recent participation in California Public Utility Commission (CPUC) proceedings on smart grid and energy efficiency. EDF is a party in the CPUC’s smart grid proceeding (R.08-12-009), is helping to pilot smart grid through the Pecan Street Partnership (PSP) in Texas<sup>1</sup>, and is involved with the Citizen Utility

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<sup>1</sup> PSP is a pilot for smart grid technology and related business models to enable the City of Austin to achieve aggressive renewable energy, energy efficiency, and other environmental goals. More information about the Pecan Street Project, a collaboration of EDF, Austin Energy, the Austin Chamber of Commerce, the University of Texas and the City of Austin can be found at [PecanStreetProject.org](http://PecanStreetProject.org). EDF’s role in the project includes managing collaboration with leading technology companies including Cisco, Dell, Gridpoint, IBM, and Microsoft, and developing the environmental performance goals and metrics.

Board (CUB) in Illinois. These efforts build upon and are informed by EDF's 40 year history finding science-based, economically savvy solutions to the world's most pressing environmental concerns.

Our deep involvement in California smart grid deployment and in pilot projects in Texas, and Illinois, is motivated by the enormous opportunity that well-designed smart grids present for improving environmental conditions and empowering consumers in California and the United States. Smart grids can reduce our reliance on fossil fuels by optimizing grid efficiency, bringing clean power online, and even enabling the transformation of our transportation system, while priming the grid for dynamic pricing, innovation, energy storage and new energy services.<sup>2</sup> Its ability to integrate these technologies and programs, which are at the core of California's clean energy policies, adds up: leading analyses indicate that well-designed smart grids can reduce the emissions from the electric sector by 30% and the emissions from the transportation sector by 25% nationally by 2030.<sup>3</sup> Unfortunately, the draft IEPR treats smart grid as add on technology<sup>4</sup> rather than the backbone of the 21<sup>st</sup>-century energy system.

EDF is also helping to develop a new "on-bill repayment" program that will allow private loans for energy efficiency and renewable energy projects to be repaid on energy bills. In working with the CPUC, IOUs and other stakeholders, EDF aims to create a competitive nationwide marketplace for underwriting building energy efficiency (EE) and renewable energy (RE) generation. The marketplace will have financing offerings that are sufficiently attractive and diverse to generate large amounts of demand from single, multi-family and commercial property owners and occupants. The IEPR would benefit from including this highly scalable program.

## **II. THE STATE OF THE ELECTRICITY GRID SHOULD BE THE CENTRAL ORGANIZING THEME OF THE IEPR**

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<sup>2</sup> Electric Power Research Institute (EPRI), Methodological Approach for Estimating the Benefits and Costs of Smart Grid Demonstration Projects, Jan. 2010, p. 1-1, *available at* [http://my.epri.com/portal/server.pt?Abstract\\_id=000000000001020342](http://my.epri.com/portal/server.pt?Abstract_id=000000000001020342)

<sup>3</sup> Studies include: Silver Spring Networks, "Connecting Smart Grid and Climate Change," Michael Jung and Peter Yeung, Silver Spring Networks; PNNL: [http://energyenvironment.pnl.gov/news/pdf/PNNL-19112\\_Revision\\_1\\_Final.pdf](http://energyenvironment.pnl.gov/news/pdf/PNNL-19112_Revision_1_Final.pdf); Austin Energy 2010 Annual Report of System Information; US Energy Information Administration, Annual Energy Outlook, 2010; Khlaq Sidhu, Burghardt Tenderich: [http://cet.berkeley.edu/dl/CET\\_Technical%20Brief\\_EconomicModel2030\\_f.pdf](http://cet.berkeley.edu/dl/CET_Technical%20Brief_EconomicModel2030_f.pdf)

<sup>4</sup> See examples at

*a. An Intelligent Grid is Central to California's Electricity Policies*

The state of California has recognized the importance of making the grid more intelligent to the ability of the IOUs to meet the state's policy goals. EDF staff have been participating actively in the CPUC's Smart Grid Rulemaking<sup>5</sup> since February 2010, providing much of the information that was used to develop the environmental requirements in the Decision Adopting Requirements for Smart Grid Deployment Plans Pursuant to SB 17 (Padilla), Chapter 327, Statutes of 2009 (D.10-06-047). In this decision, the CPUC identified eleven goals for the IOUs to accomplish through their smart grid investments – to create a grid that can:

- a. Be self-healing and resilient;
- b. Empower consumers to actively participate in the operations of the grid;
- c. Resist attack;
- d. Provide higher quality of power and avoid outages;
- e. Accommodate all generation and energy storage options;
- f. Enable electricity markets to flourish;
- g. Run the grid more efficiently;
- h. Enable penetration of intermittent power generation sources;
- i. Create a platform for deployment of a wide range of energy technologies and management services;
- j. Enable and support the sale of demand response, energy efficiency, distributed generation, and storage into wholesale energy markets as a resource, on equal footing with traditional generation resources; and
- k. Significantly reduce the total environmental footprint of the current electric generation and delivery system in California.

[Additionally,] Each section should also discuss how the Smart Grid will benefit customers and help meet environmental laws and policies contained in the Public Utilities Code.<sup>6</sup>

The potential for a smarter grid to integrate renewables and distributed resources while improving system and market efficiency is not yet harnessed in the draft IEPR.

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<sup>5</sup> Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's own Motion to Actively Guide Policy in California's, <http://docs.cpuc.ca.gov/published/proceedings/R0812009.htm>

<sup>6</sup> CPUC Decision 10-06-047 June 24, 2010 for Rulemaking 08-12-009, page 144

*b. Modernization of the Grid Should Be the Backbone of the IEPR*

In responding to legislative direction, the IEPR provides an “overview of issues” pertaining to “renewable energy; energy efficiency; increased agency coordination and improved planning processes; forecasted electricity and natural gas supply and demand; electricity infrastructure needs; transportation demand and alternative fuel and vehicle development...” These tightly linked issues are not tackled through any systematic organizing premise.

While the loading order and existing legislative and executive directives provide ample impetus for the chapters of the IEPR, the discussion of grid improvements needed to efficiently achieve these goals is critical and should be woven throughout the document. To this end, the vision and goals identified by the CPUC for smart grid could provide comprehensive and effective guiding principles. In evaluating IOUs’ plans for SG deployment, EDF has focused on four of these goals, which we believe are broadly representative of the intelligence that needs added to our electric grid:

- Consumer Empowerment – SG should empower consumers with better information and expanded choices, and opportunities to respond to price signals and decide if, when and where to purchase, store or generate electricity.
- Create Platform for Technologies and Services – SG should readily allow for integration of new market participants, technologies and services for demand and supply side applications.
- Demand-side Resource Development for Energy Markets - SG can enable the sale of demand response, energy efficiency, distributed generation, and storage in energy markets. Smart grid enables the valuing demand-side resources as fluently as supply side generation, and it should enable consumers (and their homes, appliances and vehicles) to take advantage of this fluency.
- Environmental Footprint – SG can facilitate integration of low emitting generation, reduce demand, and fossil generation, while integrating electric vehicles.

**III. WORK SMARTER, NOT HARDER: HARNESS GRID INTELLIGENCE IN THE IEPR**

*a. Demand Forecast*

The draft IEPR does not analyze a scenario in which energy demand does not grow, and growing at increasing rates over the next five years. This expectation, though conservative and pragmatic, does not allow for dramatic changes in energy management, such as load shifting via demand response, and distributed generation and storage, might prompt at scale. To the

extent that utilities achieve the four goals identified above by 2020, portions of the draft IEPR ought to be clarified to reflect complete representation of smart grid potential. For example, the energy efficiency program goals and targets might be expanded in ways not reflected in the energy demand forecasts contained in the draft IEPR. Expectations for distributed generations and investments in building automation may not represent the revolution of new energy services models spawned by smart grid. Are smart grid enabled buildings, appliances and vehicles contemplated as active responders to pricing signals, capable of low-power operating modes (made possible by both consumer/economic demand and code)? If so, it is not clearly represented in the draft IEPR. If not, then the vision of the IEPR can be expanded.

#### *b. Renewables Distributed Resources*

The draft IEPR recognizes some benefits of the smart grid, stating “*Investments in advanced metering and smart grid will empower customers to use energy more efficiently. Through agency supported pilot studies, the agencies are targeting 1,000 MW of additional storage capacity by 2020 to promote renewable integration.* (pg. 71)” However, the draft IEPR may not reflect the full potential of distributed generation and storage enabled by smart grid, when combined with locational marginal pricing, energy markets that value fully demand-side resources, and consumer (perhaps even “prosumer”) informatics and economic incentives.

Smart grid *planning* can also be reflected more rigorously in the recommendations of the IEPR. For example, recommendation #3 for renewable distributed generation (pg. 49) does not appear to leverage the planning work already underway for smart grid.

#### *c. Demand Response*

In another example where smart grid might be represented more robustly, the draft IEPR may not reflect the full potential of both automated and manual/voluntary demand response once smart grid is deployed fully (i.e., with the estimates of committed and uncommitted energy savings from efficiency programs). We appreciate that staff are “*ensuring that the demand forecast reflects reasonable levels of efficiency from a comprehensive set of efforts expected to occur* (pg. 108)”. EDF agrees it is appropriate to consider all forcing factors

– “*programs, codes and standards, and price and market effects*” – and that individual apportionment amongst those factors is challenging. We cannot see in the draft IEPR how the potentially transformational aspects of smart markets and smart consumers could produce outcomes not observed in the past, foreseen by a few engineers, demonstrated in even fewer emerging pilots, and only just recently articulated in visionary smart grid deployment plans for California customers.

*d. Metrics*

EDF notes that relevant metrics are being contemplated in two contexts – the smart grid proceeding at the CPUC, and in response to the Governors Clean Energy Jobs Plan. EDF has commented extensively on metrics in the CPUC smart grid proceeding, and thus we incorporate those comments by reference into this letter. EDF appreciate that CEC staff have acknowledge the opportunity for the IEPR metrics to be informed by the CPUC smart grid proceeding (see page 72) but encourage thinking beyond demand response. In fact, EDF has proposed a set of environmental performance metrics, and are developing a recommendation for measurable goals in smart grid plan roadmaps.

**IV. ON-BILL REPAYMENT CAN SCALE UP INVESTMENTS IN BUILDING ENERGY EFFICIENCY AND DISTRIBUTED GENERATION**

EDF is pleased to see a recommendation for existing building energy efficiency to “*collaborate with local governments, the financial industry, and other stakeholders to promote the availability of financing products for the upgrade of all building sub-sectors* (pg. 68).” We have been building a coalition of environmental groups, financial institutions, contractors and project developers to help develop on-bill repayment (OBR) programs. With on-bill repayment, building owners and renters would be allowed to fund energy efficiency upgrades and renewable electricity generation projects with bank or other private loans that are repaid through their energy bills.

The draft IEPR might explicitly include on-bill repayment as an innovation that promises to be a choice clean energy and efficiency financing strategies for a variety of existing buildings. OBR can work for single-family, multi-family and commercial buildings. The on-bill repayment can be structured for a variety of financing techniques, including loans, leases, Energy Service

Agreements, and Power Purchase Agreements. Most significantly, OBR provides a new route to funding at attractive terms.

Additionally, OBR will engage the lending community for its core competency, underwriting loans, and will allow utilities to focus on their core business practices. As well, OBR will be voluntarily undertaken with private capital, so no ratepayer or taxpayer monies will be involved. For these reasons, OBR is inherently scalable when existing financing from utilities is quite limited and already oversubscribed.

## **V. CONCLUSION**

The CPUC is working closely with IOUs, EDF, and other stakeholders to develop smart grid deployment plans that form a solid foundation for California's clean energy future. EDF believes that a smarter grid – guided by appropriate principles – could provide a central organizing backbone for the IEPR. The smart grid “backbone” can reveal synergies and potential targets that the programs, codes, standards and pricing/market effects may not reveal in isolation. Practically, the smart grid will provide infrastructure that is essential for meeting California's clean energy goals - transformation won't be realized if the grid isn't sufficiently flexible to evolve.

In addition to a vision for smart grid within the IEPR, EDF recommends that the building efficiency discussion consider on-bill repayment explicitly. EDF has been developing on-bill repayment as a financing mechanism for existing buildings. On-bill repayment enables building owners and occupants to repay private loans for energy efficiency and renewable electricity projects on their energy bills. This mechanism deserves special mention in the chapter on building energy efficiency.

Respectfully signed and submitted on December 23, 2011.

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