

COMPETITIVE THREATS
to
IBEW 1245

or

The Challenge of Market Ideology

The Vertically Integrated Utility



Generation

PURPA – beginning of the end of utility
generation

>500 Independent Generating Units

>12,600 MW



PROPOSED CONFERENCE REPORT NO. 1
AUGUST 28, 1996

AMENDED IN SENATE JUNE 19, 1996

AMENDED IN SENATE APRIL 8, 1996

AMENDED IN ASSEMBLY JULY 19, 1995

AMENDED IN ASSEMBLY JULY 11, 1995

AMENDED IN ASSEMBLY JUNE 19, 1995

AMENDED IN ASSEMBLY APRIL 25, 1995

CALIFORNIA LEGISLATURE—1995–96 REGULAR SESSION

ASSEMBLY BILL

No. 1890

**Introduced by Assembly ~~Members Brulte, Conroy, and~~
~~Martinez~~ Member Brulte**

***(Principal coauthors: Assembly Members Conroy,
Kuykendall, and Martinez)***

(Principal coauthors: Senators Leonard, Peace, and Sher)

***(Coauthors: Assembly Members Ackerman, Alby, Baca,
Battin, Baugh, Boland, Frusetta, Goldsmith, Harvey,
Margett, McPherson, Miller, Morrissey, Morrow, Pringle,
Richter, Alpert, Baldwin, Brown, Bustamante, Cunneen,
Davis, Ducheny, Escutia, Gallegos, Hawkins, Hauser,
House, Kaloogian, Katz, Knowles, Machado, Mazzoni,
Kevin Murray, Willard Murray, Napolitano, Olberg,
Poochigian, Rainey, Rogan, Takasugi, and Woods)***

***(Coauthors: Senators Alquist, Calderon, Haynes, Johannessen,
Kelley, Maddy, Ayala, Dills, Costa, Craven, Hughes,
Johnston, Kopp, Killea, Leslie, Marks, Petris, Polanco,
Rosenthal, Russell, Solis, and Monteith)***

February 24, 1995

Generation Remaining after divesting



Generation Suppliers

- Independent Gen — 12,600 MW
- PPAs — 30,000 MW?
- DA — 12% of total load
- CCAs — small but GROWING
- Rooftop Solar

GENERATION

Summary:

Utilities have a small and shrinking share

Transmission

- FERC Order 1000
 - Utility Right of First Refusal eliminated

NextEra Estrella Substation

NextEra Suncrest VAR project

Distribution

- Direct Access
- Community Choice Aggregation
- Storage
- Automated Meters
- Net Energy Metering

Net Energy Metering



EV Charging



Distribution

- Direct Access
- Community Choice Aggregation
- Storage
- Automated Meters
- Net Energy Metering
- Microgrids



What is a Microgrid?

A small, integrated energy system of interconnected loads and distributed energy resources (producing electric [or], both electric and thermal energy), which can operate in parallel with the grid or in an intentional island mode.

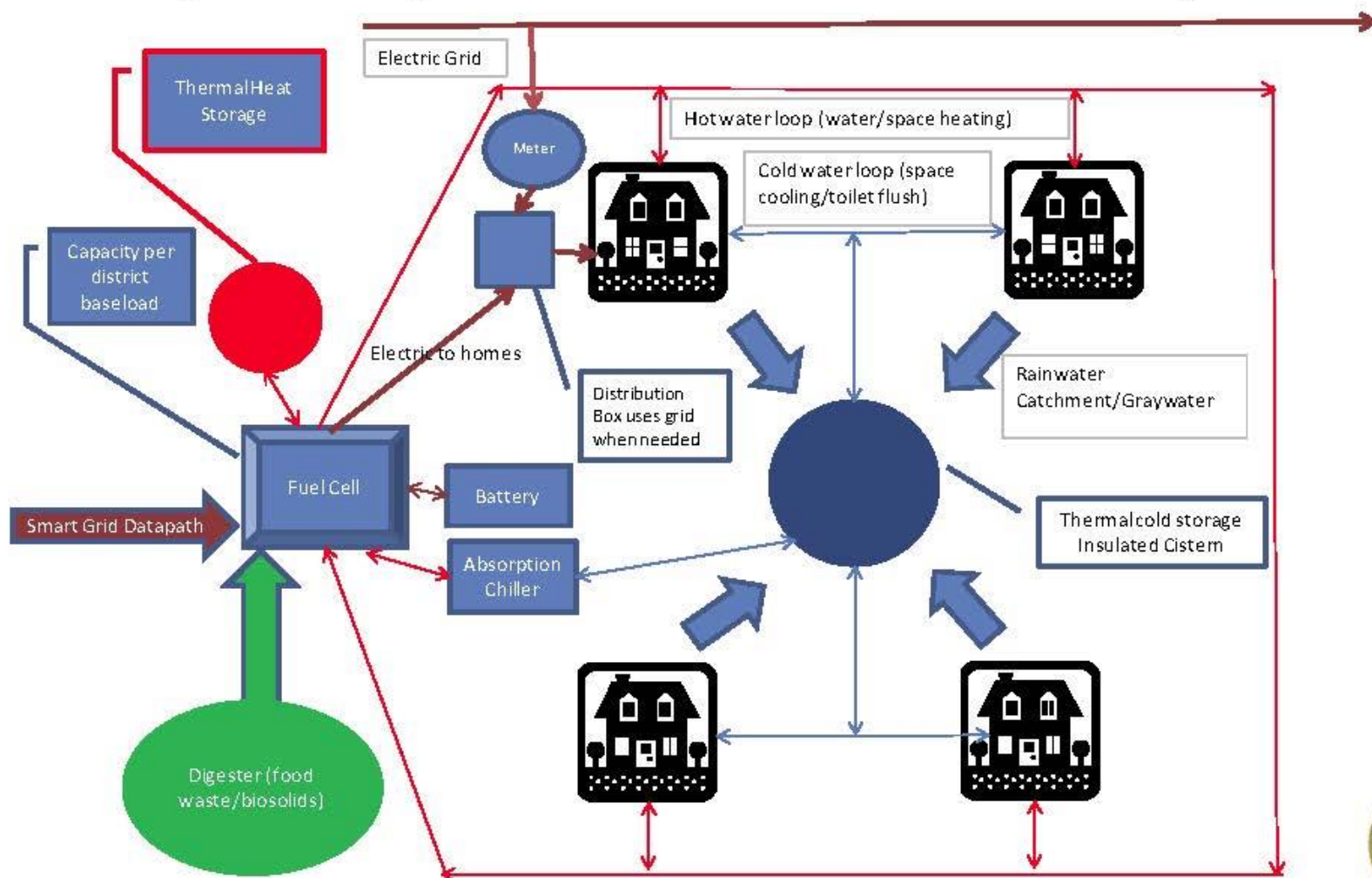
-NYSERDA microgrid whitepaper (Sept. 2010)

And appearing to the grid as a multi-function resource.





Example of Neighborhood “Behind-the-Meter Integrated Utility”





Advanced Microgrid Definition

- Multiple customer, multiple meter, with multiple resource types interconnected on both sides of the meter, **using the existing utility-owned distribution infrastructure**; interacting with markets as a resource.
Islandable
- Control System coordinating all resources
- This is the case that is the most interesting from a state policy standpoint, as it could:
 - Change the cost equation for distributed generation, storage
 - Ease integration challenge for intermittent renewables and high penetrations of distributed generation
 - Enable greater participation by customers in energy markets



SolarCity's Game Plan

“The microgrid product is basically a culmination of all of the technology that SolarCity's been developing over the past eight years....It's a template that can be scaled up to basically BE the next-generation grid.”

Peter Rive, SolarCity

SolarCity's Game Plan

“SolarCity’s package of products and services would allow localities to create independent electricity networks using a combination of rooftop solar power, batteries, backup generators and demand management.”

New York Times, March 16, 2015

SolarCity's Game Plan

SolarCity

Grid Engineering

A Pathway to the Distributed Grid

*Evaluating the economics of distributed energy resources
and outlining a pathway to capturing their potential value*



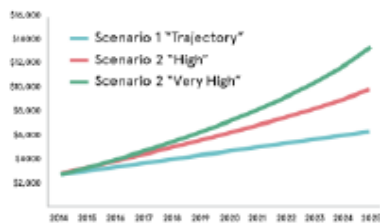
White Paper

SolarCity's Game Plan

Utility Planning and Sourcing Utilizing Infrastructure-as-a-Service Model

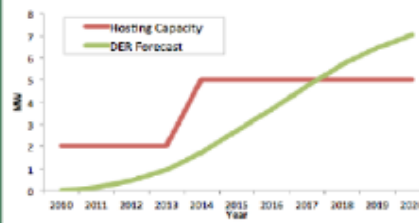
1. Forecast Growth & Maintenance

Forecast load and DER growth and required equipment maintenance



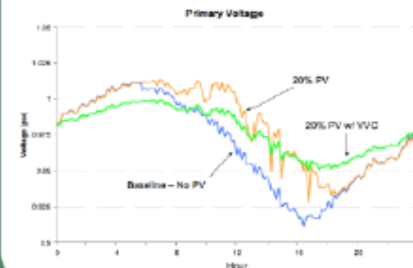
2. Identify Grid Needs

Compare growth to available hosting and circuit capacities



3. Evaluate Solutions

Propose solutions to meet identified needs, including the use of DER portfolios



Traditional Self-Supply

4. Select & Deploy Equipment

(e.g. transformer, capacitor bank)

5. Operate & Collect

Investment Income

Infrastructure-as-a-Service

4. Select & Deploy Equipment

(e.g. circuit capacity, reactive power)

5. Operate & Collect

Service Income

Meet
Grid Need

SolarCity's Game Plan

Distribution Loading Order: Sourcing Solutions

PRIORITY	RESOURCE TYPE	RESOURCE EXAMPLES
1	Distributed Energy Resources	Energy efficiency, controllable loads/demand response, renewable generation, advanced inverters, energy storage, electric vehicles
2	Conventional Distribution Infrastructure	Transformers, reconducturing, capacitors, voltage regulators, sectionalizers

SolarCity's Game Plan

*“Case Study: PG&E's Planned Distribution
Projects in 2017 General Rate Case”*

SolarCity's Game Plan

*Net Benefit of DER Solutions to PG&E Electric Distribution Capacity Request – 2017 GRC
(Calculations Based on PG&E Cost and Benefit Assumptions)*

TYPE	CATEGORY	SOURCE	NPV (2015 \$M)
Benefits	Energy + Losses	PG&E NEM Successor Filing ⁴⁸	\$946
	Generation Capacity ⁴⁹	PG&E NEM Successor Filing	\$79
	Distribution Capacity	PG&E 2017 General Rate Case	\$586
	Transmission Capacity	Not Included	-
	Ancillary Services	Not Included	-
	Renewable Energy Compliance	PG&E NEM Successor Filing	\$99
	Voltage and Power Quality	Not Included	-
	Conservation Voltage Reduction	Not Included	-
	Equipment Life Extension	Not Included	-
	Reliability & Resiliency	Not Included	-
	Market Price Suppression	Not Included	-
	Societal Benefits	Not Included	-
	Total Benefits		\$1,709
Costs	Program Costs	PG&E NEM Successor Filing	\$55
	Integration Costs	SCE DRP with SolarCity Revisions	\$363
	Equipment Costs	PG&E NEM Successor Filing	\$1,188
	Total Costs		\$1,605
	Total Net Benefits		\$104

CPUC Reaction?

“We anticipate the issuance of a Ruling in the near future [regarding] changes to the current framework of financial incentives for the investor-owned utilities. The goal ... would be to remove any financial disincentives that the utilities may face in considering the *deployment of distributed energy resources in lieu of potential utility capital investments.*”

SolarCity's Game Plan

“Well, why don’t we actually run the grid?”

Peter Rive, SolarCity

Questions?

Marc Joseph

Adams Broadwell Joseph & Cardozo

mdjoseph@adamsbroadwell.com