

PG&E's Role in California's Clean Energy Future

Emma Wendt
Pacific Gas and Electric Company
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Outline – PG&E's role in California's Clean Energy Future

1. About PG&E
2. Supply side
3. Demand side
4. Conclusion
5. Questions



PG&E: a large and green utility

Named by Newsweek as the “**Greenest Utility in the America**”

Serves **5% of the U.S. population**; emits **< 1% of the total CO₂** emitted by the utility sector

Connected more solar customers than any other utility in the country —
~35% of total customer solar installed



Employees	19,400
Electric and gas distribution customers	5.1 MM electric 4.3 MM gas
Electric transmission circuits	18,616 miles
Gas transmission backbone	6,136 miles
Owned electric generation capacity	6,800+ MW
Total peak demand	20,000 MW

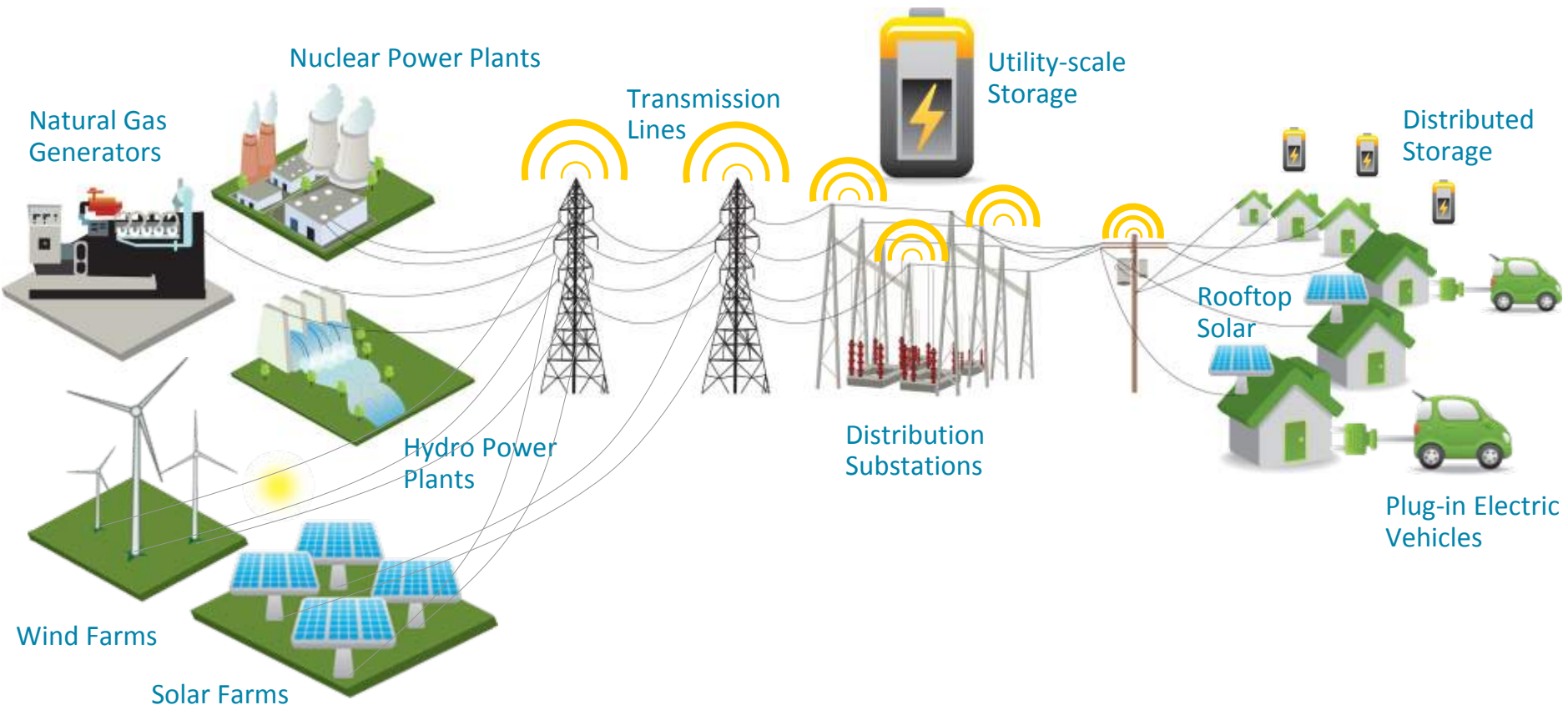


PG&E is moving to a sustainable electric system

Power Plants

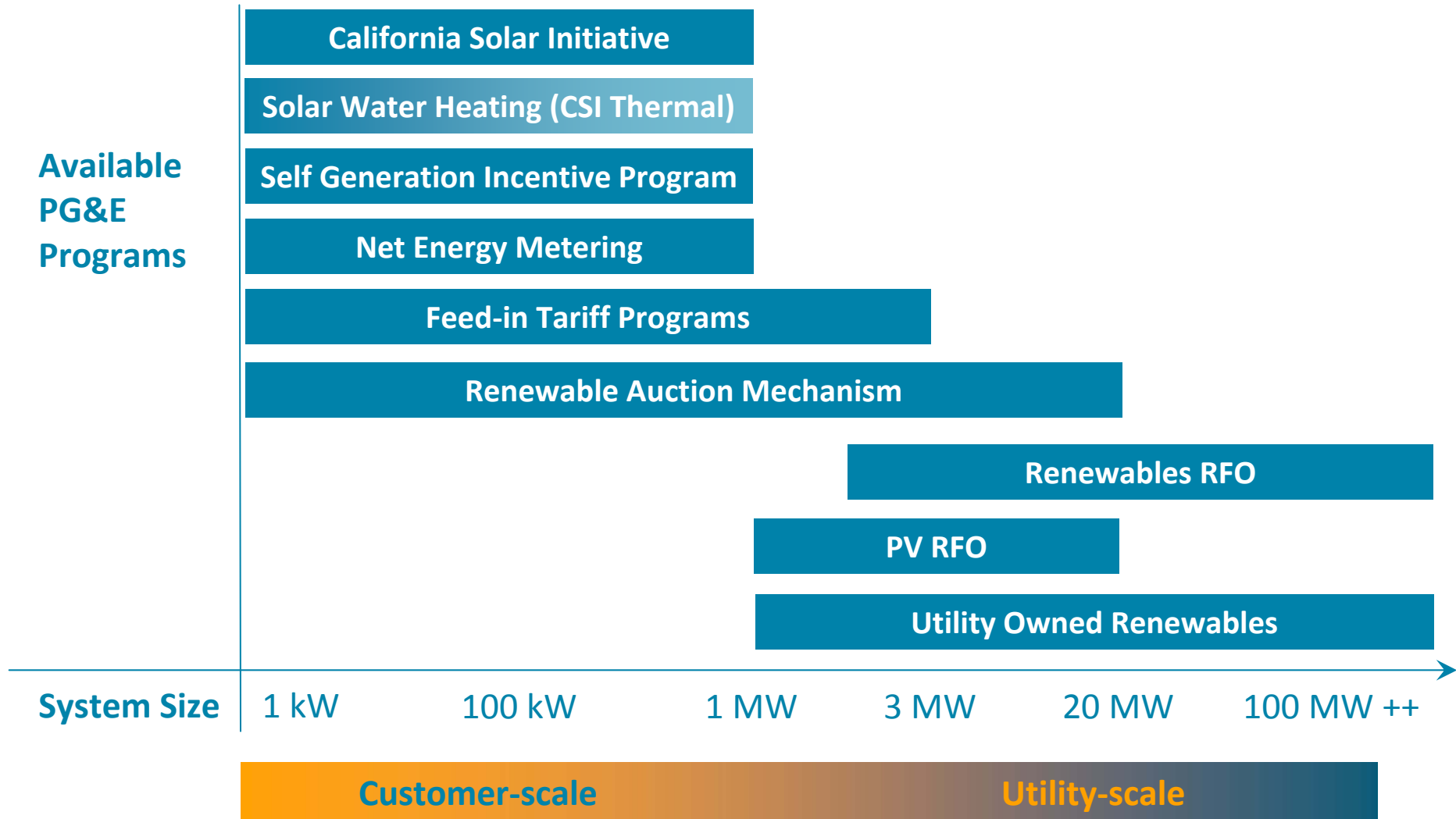
Electric Grid

Customers





PG&E renewable programs vary as generation capacity increases





California's renewables requirement jumped from 20% to 33%

History of California's RPS requirement:

- Established in **2002 – 20% by 2017**; accelerated in **2006 – 20% by 2010**

PG&E's current obligation:

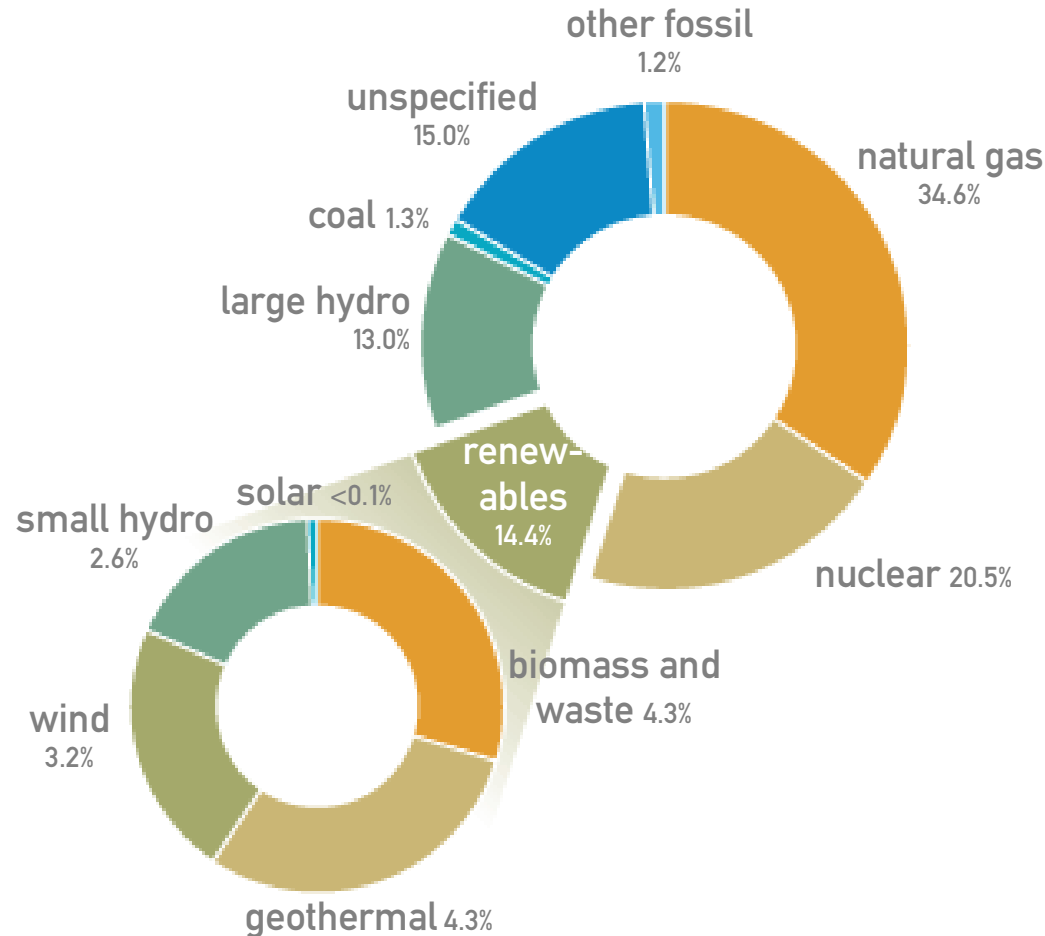
- 20% eligible renewables by 2010**
- Flexible compliance allows until 2013 to meet obligation

Future obligation:

- Gov. Schwarzenegger **vetoed a bill for 33% by 2020** in Aug. 2009
- Governor passed Executive Order in Sept. 2009 directing **CA Air Resources Board** to adopt regulation to **support 33% RPS** by 2020 (regulations approved on Sept. 23, 2010, after last bill was not voted on by Sept. 1, 2010)
- New 33% RPS bill (SB 23) recently introduced
- TREC decision (Jan. 13) limits out-of-state contracts to 25% of obligation



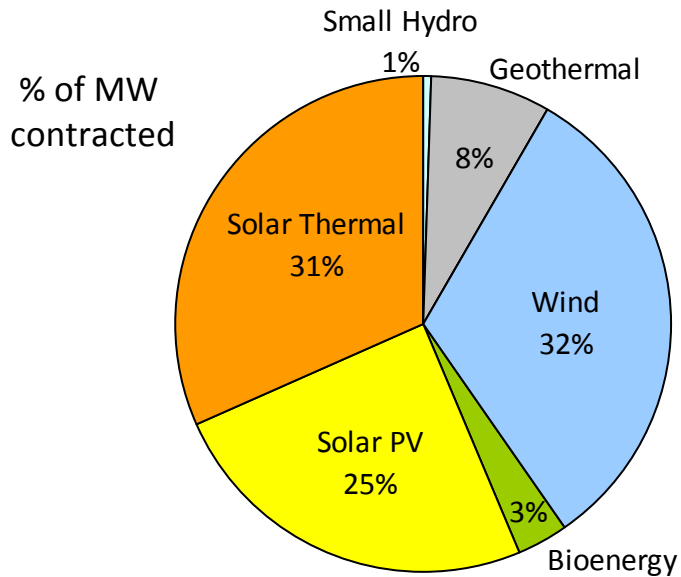
PG&E's 2009 electric power mix (MWh)



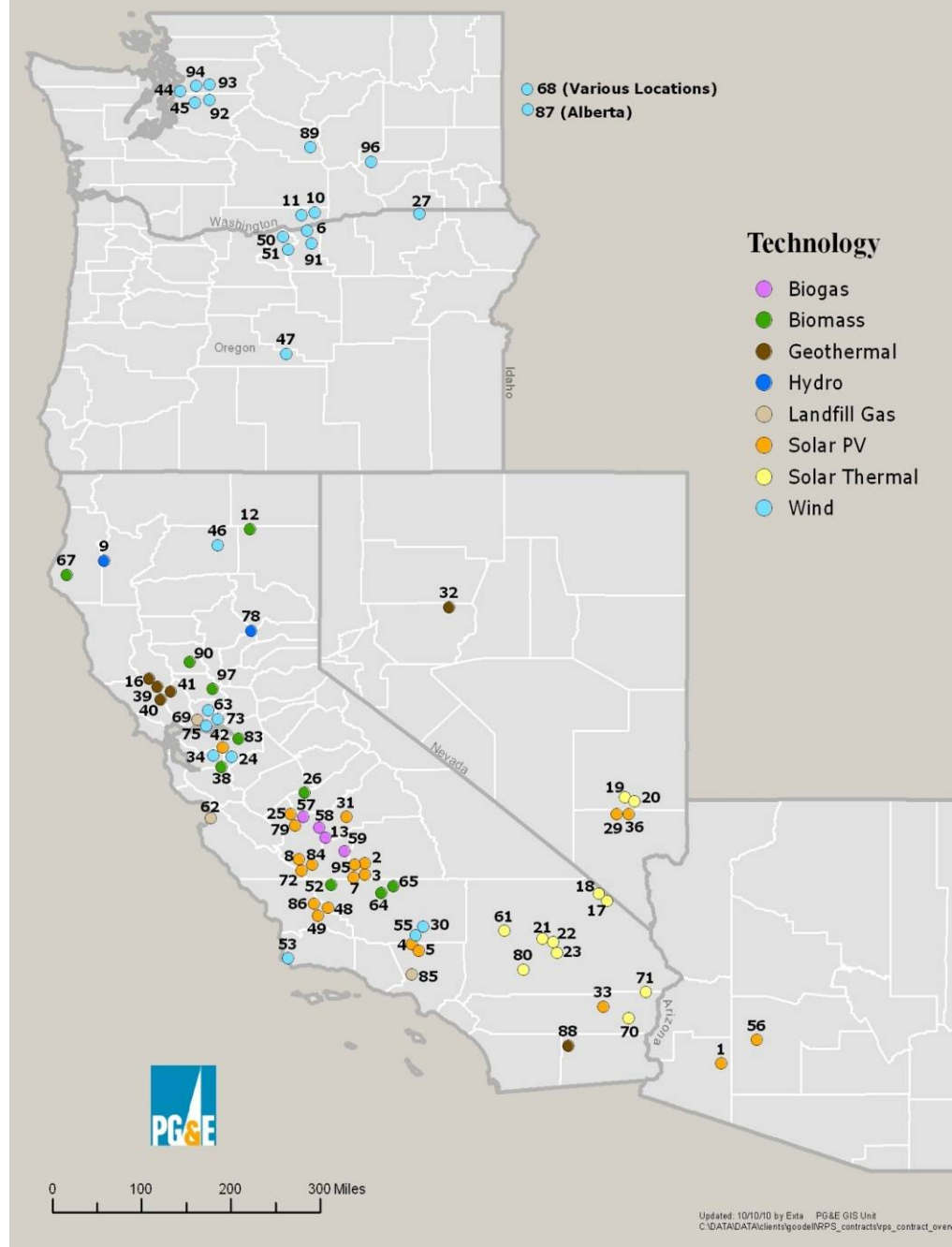
* Please note that these percentages represent preliminary data. Additionally, "Unspecified Sources" refers to electricity generated that is not traceable to specific generation sources by any auditable contract trail and "Other Fossil" includes diesel oil and petroleum coke (a waste byproduct of oil refining).



PG&E maintains a diverse mix



	#	MW
Geothermal	9	661
Wind	34	2,737
Bioenergy	24	277
Solar PV	22	2,336
Solar Thermal	13	2,735
Small Hydro	5	49
Wave	1	2
Total	108	8,796





PV Program hopes to speed up PV installations

Program basics

- 5-year program, starting in 2010
- Up to **250 MW utility-owned generation (UOG)**
- Up to **250 MW power purchase agreements (PPAs)**
- Facilities sized **1-20 MW** in PG&E's service territory
- Approved by CPUC on April 22, 2010

Utility-owned generation details

- Projects developed and owned by PG&E
- Built on land near substations – minimize cost and interconnection delays

Power Purchase Agreement details

- Terms approved by CPUC Dec. 2010 – contracts will have faster regulatory review
- Prices based on competitive solicitation
- PG&E will issue RFO on Feb. 2; bidders conference on Feb. 8; bids due on Mar. 2

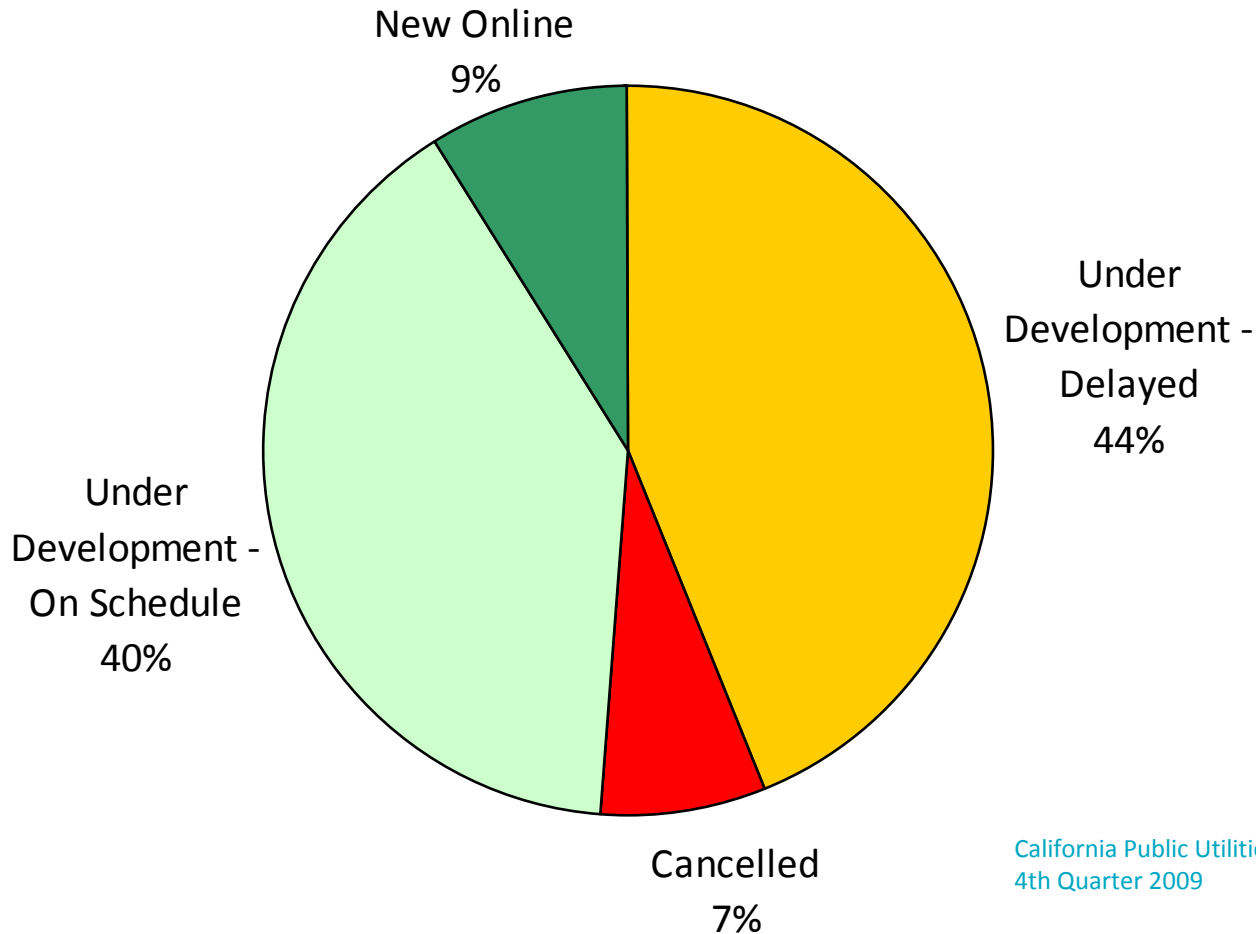


2 MW Vaca-Dixon PV pilot official opening in June 2010





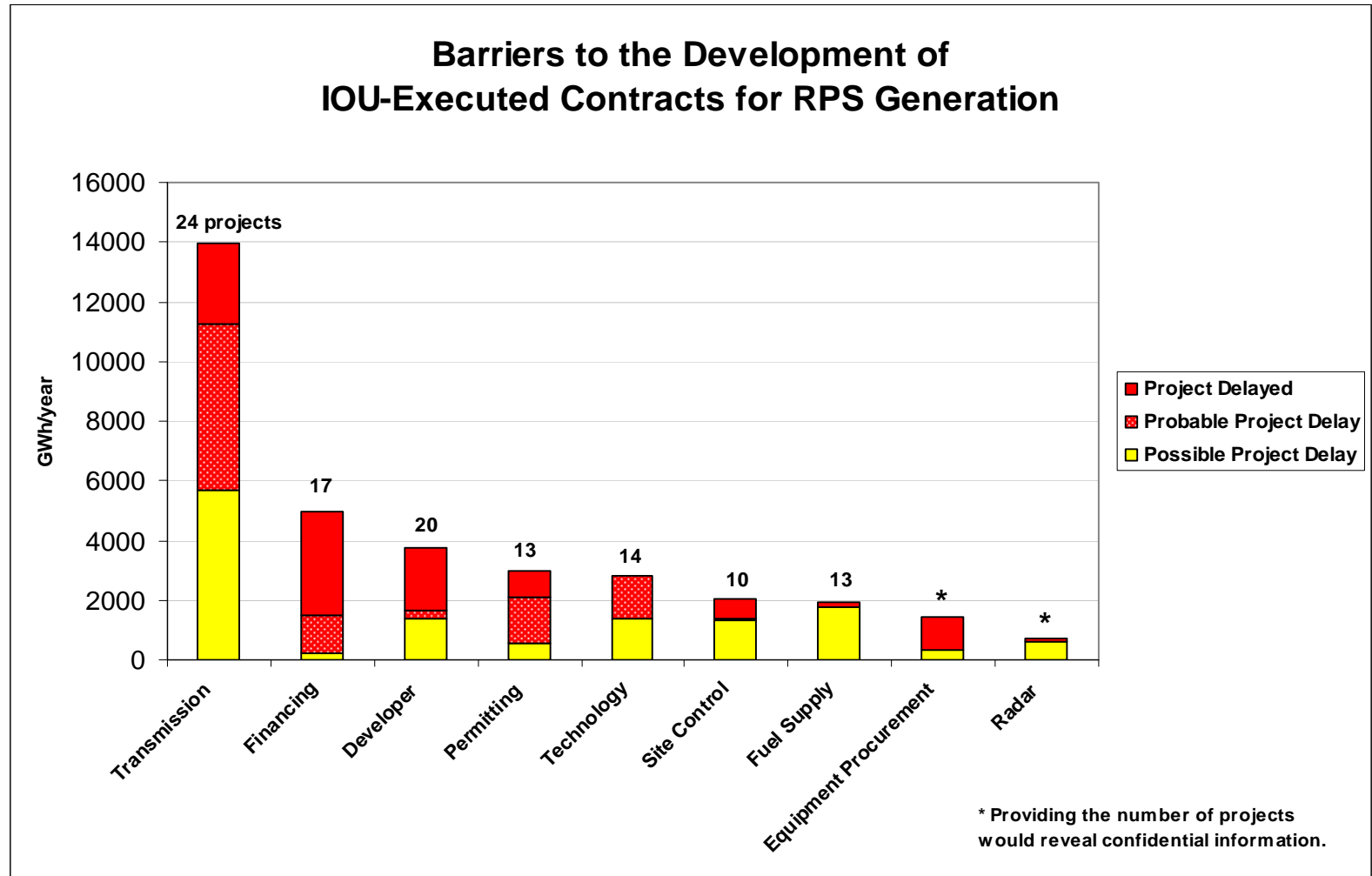
Only ½ of renewables capacity in California is online or on schedule



California Public Utilities Commission,
4th Quarter 2009



Transmission is causing most delays, but other barriers are significant



Barriers associated with approximately 50 CPUC approved, but not yet operational contracts
Data are outdated, but indicative of areas that remain problematic for renewable resources

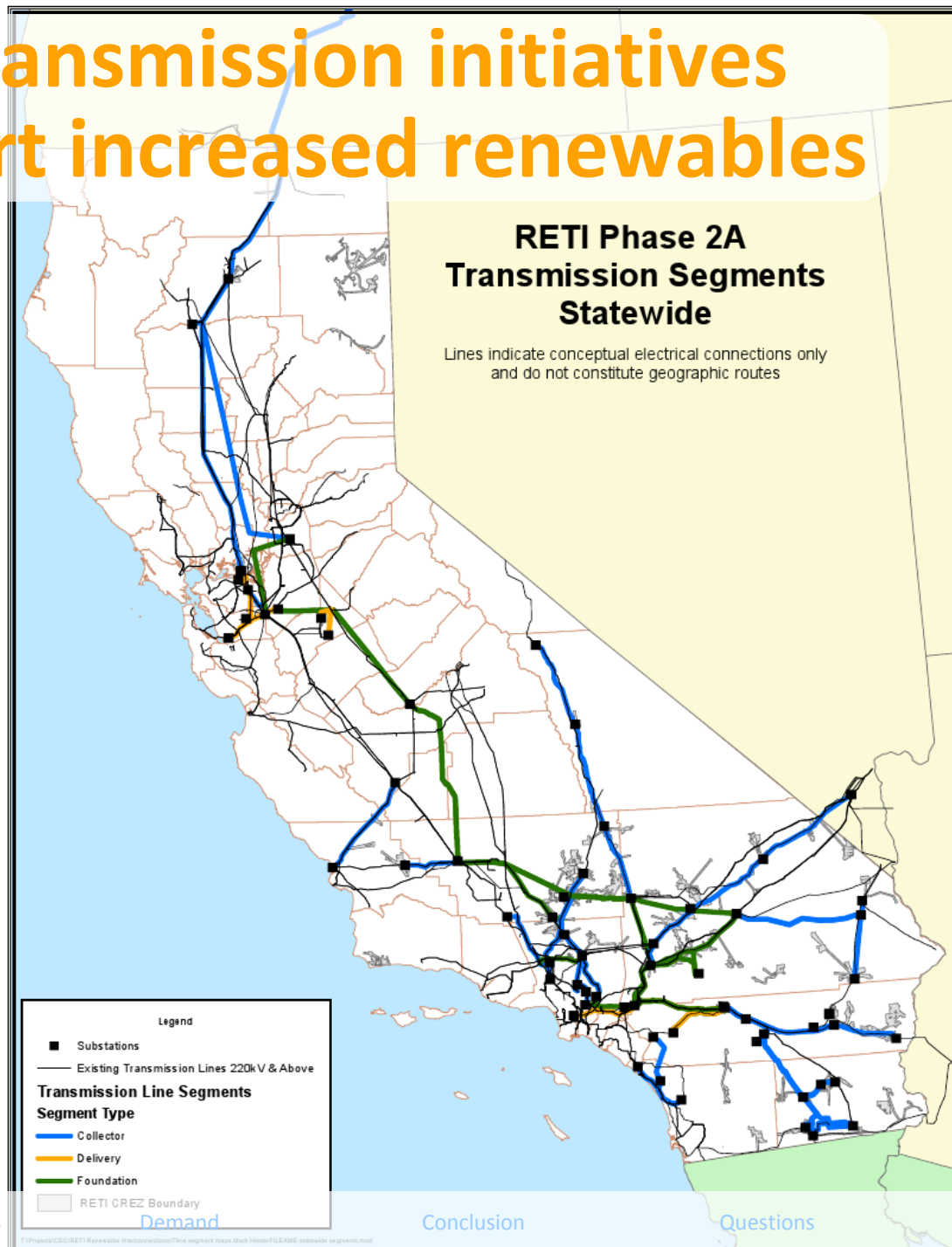


California's transmission initiatives aim to support increased renewables

California's Renewable Energy Transmission Initiative (RETI) has:

- Identified Competitive Renewable Energy Zones (CREZ)
- Prepared detailed transmission plans for future development

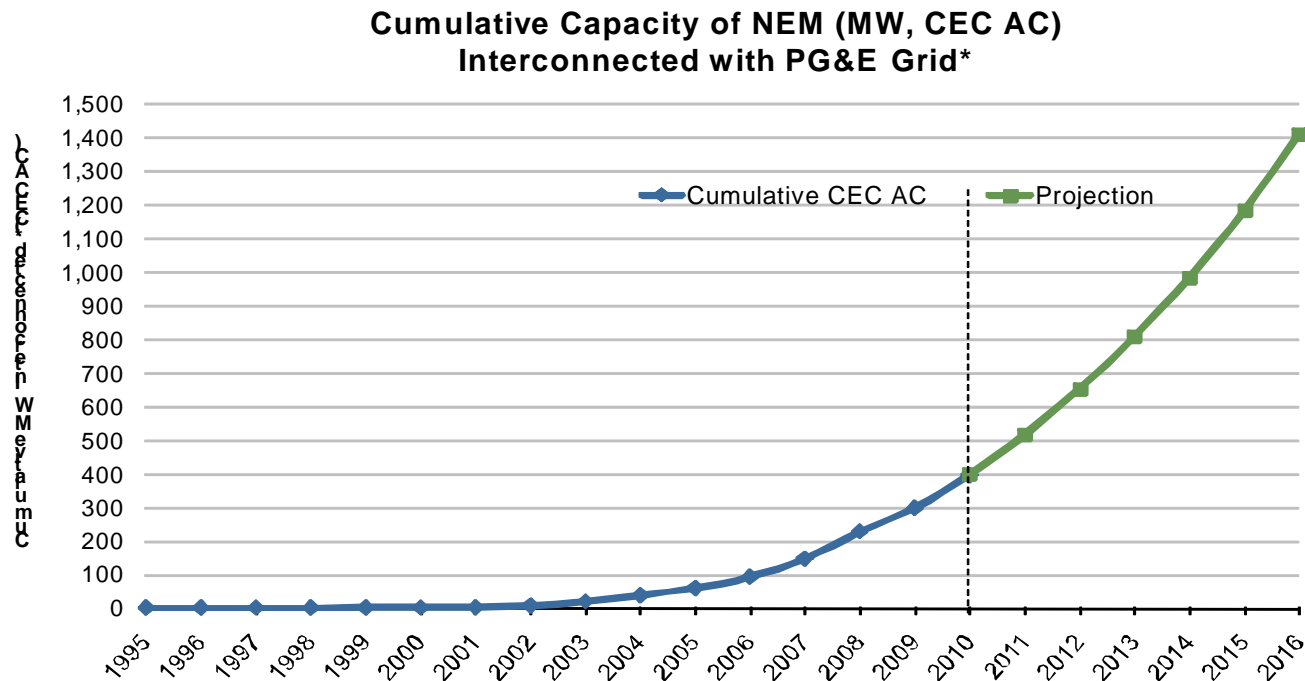
CPUC has identified the need for 11 major new transmission lines at a cost of \$16 billion; 3 are underway





PG&E customers lead in on-site solar generation

More than 45,000 PG&E customers have on-site solar generation



* Includes all PV and Wind NEM (and VNEM) projects, excludes Non-Export projects



~35% of US residential PV interconnections are in PG&E's service territory



PG&E's energy efficiency programs

PG&E offers a range of customer energy efficiency programs:

- Rebates and financial incentives
- Workforce education and “green collar” training
- State and local partnerships
- Advancing new and emerging technologies
- Support for building codes and appliance standards



Ask the Pacific Energy Center for more info



SmartMeter™ systems can help enable customers to use energy more wisely

Automated meter reading for all gas and electric customers

- 7.5 million advanced meters installed
- 9.7 million to be installed by project completion

Frequent meter reads

- Hourly intervals for electricity
- Daily intervals for gas
- 15-min intervals for commercial customers

Customer benefits today and a platform for future innovation



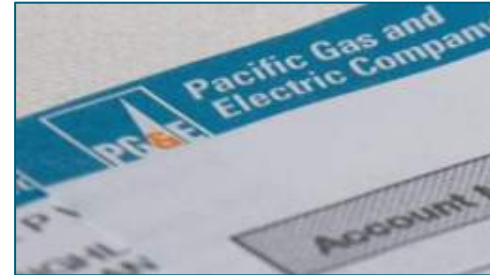


PG&E is exploring several options for plug-in electric vehicle integration

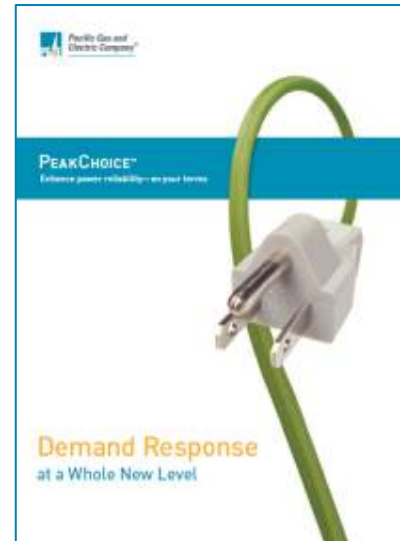
**Metering
options**



**Pricing
options**



Tools and resources



Demand response options



**Active in 23
working groups**
(governments/NGOs/
industry/customers)



A few recommendations

Renewables

- Streamline and improve permitting process; learn from best practices

Contracting

- Newer ways to contract for projects are nice, but we also need those under contract to come online

Funding

- Support pilots to bring technologies from the lab to commercial stage

Your support

- Be a YIMBY (Yes in My Back Yard) — for renewables and SmartMeter™ systems



Conclusion

We need **all of the components** in the plan for a clean energy future

- Crucial for all agencies to **work together**
- **PG&E is involved** in all aspects of our clean energy future
- Need continued **effective collaboration**, and **your support**



Keep asking questions

Emma Wendt

exwx@pge.com | 415-973-8820