PG&E's Smarter Grid Deployment Plan Proposal

California Public Utilities Commission Workshop

Smart Grid Rulemaking, R.08-12-009

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Agenda

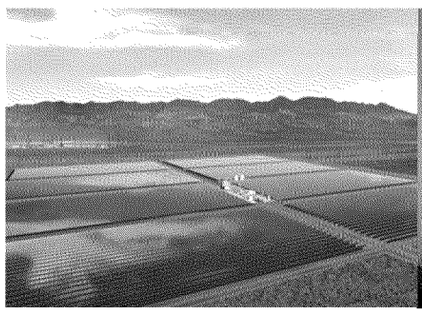
PG&E's Smart Grid Roadmap	• What is the Smart Grid? • Smart Grid efforts are incremental and a journey • PG&E's Decision Making Model
SB 17 Deployment Plan Requirements	• Use of Smart Grid deployment plans and standard for review • Smart Grid standards and metrics • Coordinating Smart Grid plans and policies • Cyber-security standards
Next Steps	• National standards • SB 17 deployment plan compliance • Specific projects and proposals in GRCs and individual proceedings

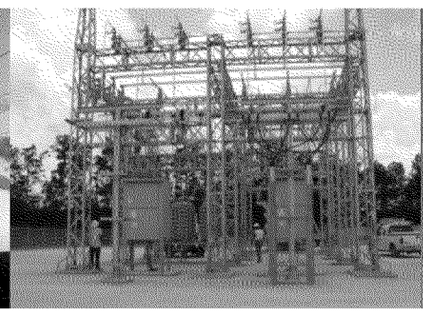
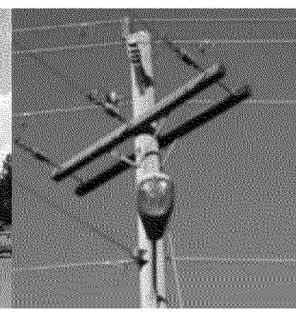
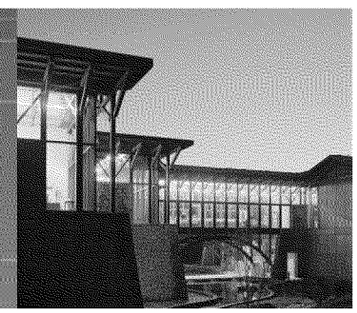
A Smart Grid

Smart

Overlay with an "Intelligent" Infrastructure

- Pervasive sensing and measurement devices
- Automated control features
- Advanced data communications
- Computing and information management



Power Plants | Transmission Networks | Substations | Distribution Networks | Consumers

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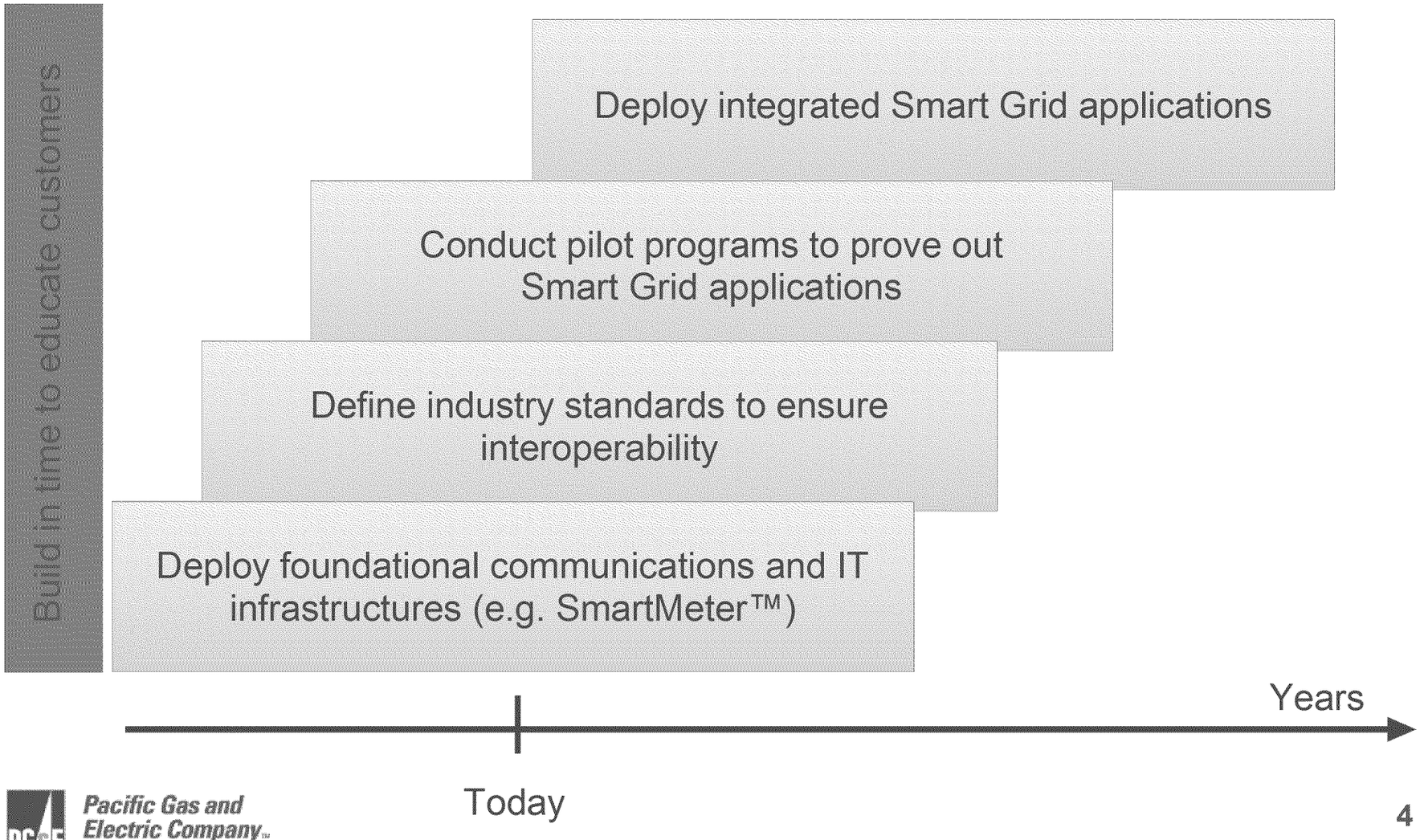
Smart Grid Efforts Are Incremental and Will Include Customer Education



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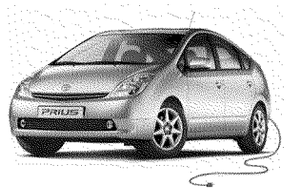
Smart Grid Is a Journey

Today
Integrate existing services to new platform

- Automated meter reading (OIS/Smart Meter Integration)
- Demand Response/TOU (A/C Control, Auto DR)
- Electric vehicles (PG&E fleet purchases, EV impact studies)
- Strategy and testing phase for other areas (ARRA projects)

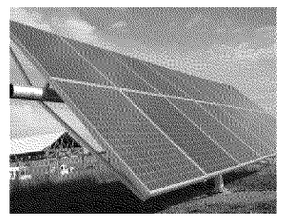
Near Term
Next 1–3 Years
Transform existing services

- Automated home energy management (HAN)
- Plug-in hybrid electric vehicle SmartCharge™ Pilot
- Dynamic Pricing (Commercial & Industrial by 2010)
- More automated Distribution and Transmission Grids (Pending regulatory approval)



Future
Next 3-5 Years
Enable future services and foster innovation

- Integrated local renewable generation (CSI, utility programs)
- Utility-scale storage and integrated renewables (Compressed Air Energy Storage, batteries)
- Deep penetration and control of Demand Side Management



Increasing automation with time

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PG&E's decision making model

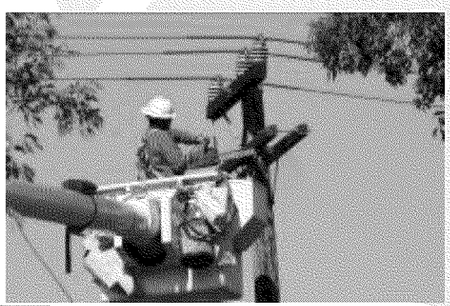
Standards and Consumer Education are key to Smart Grid Advancement.

Standards definition

- PG&E plays a leading role in shaping and accelerating the standards that will underlie future smart-grid implementations

Testing facilities

- PG&E expands and accelerates its plans for a fully-functional, extensible testing facility to enable rapid prototyping and testing of smart-grid technologies
- Accelerates technology development and ensures standards compliance early on
- Develops preliminary customer communications to support pilots



Pilots

- PG&E implements tested technologies in a real-world setting to demonstrate value of the end-to-end smart grid
- Works with customers to prepare for the new technologies and services

Full system deployment

- PG&E extends current pilots to full-scale roll-out, assuming benefits and technology are proven
- Insights are used to feed the next cycle of the technology deployment cycle

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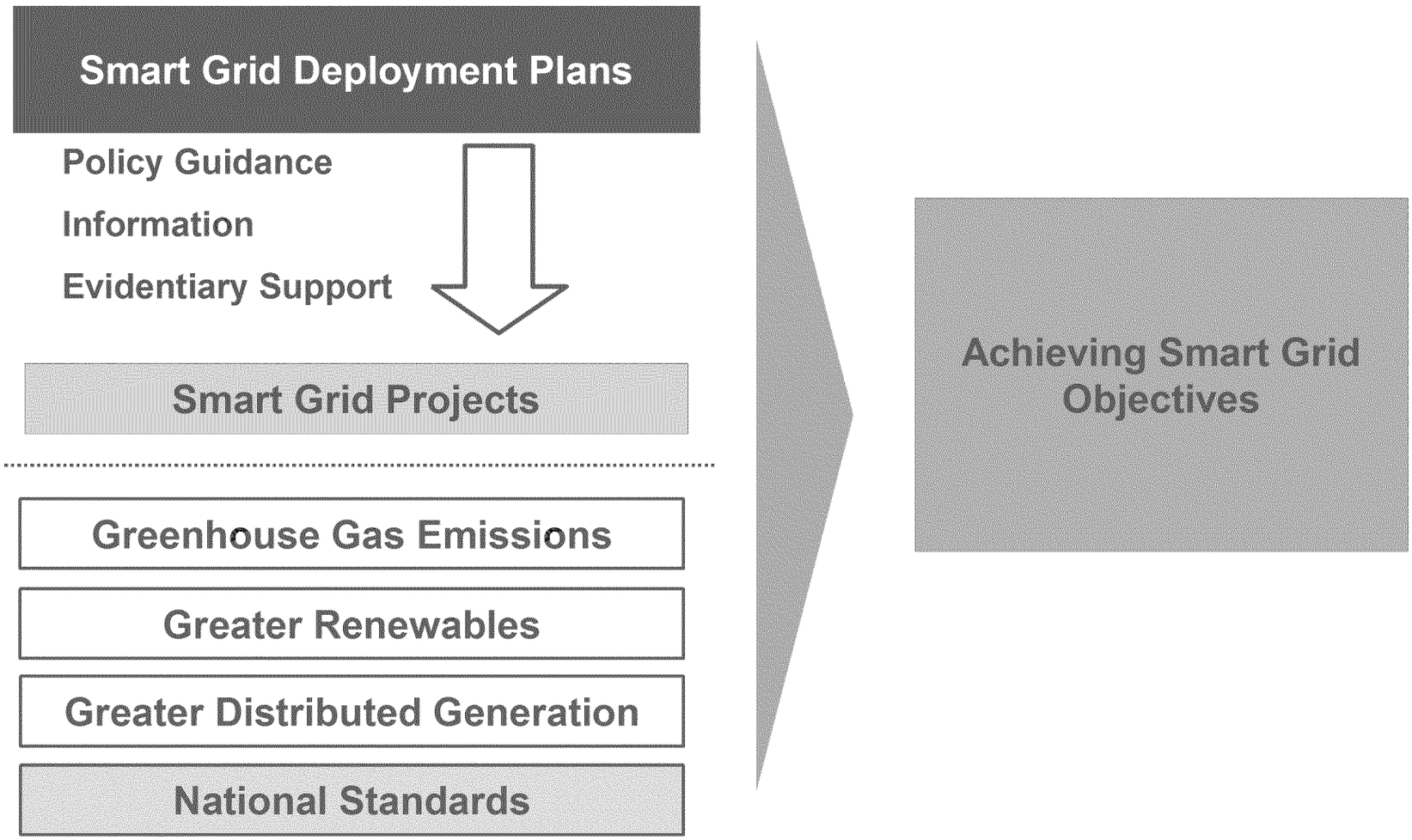
SB 17 Deployment Plan Requirements

Use of Smart Grid Deployment Plans

Recommendations

- Smart Grid deployment plans should be source of information and policy direction, but not binding in individual proceedings
- Each utility is at different starting point, so Commission should retain flexibility to review projects and investments on incremental basis
- Smart Grid standards still be developed at national level, so premature for deployment plans to include specific timelines and cost estimates
- Commission should encourage variety and flexibility in the marketplace, and avoid “top down” plans and goals
- Describe costs and benefits – not all benefits are financial
- Connect deployment to supporting policy goals (i.e. GHG, RPS, Pricing)

The Smart Grid Deployment Plans are one of the tools to use to achieve the Smart Grid Objectives



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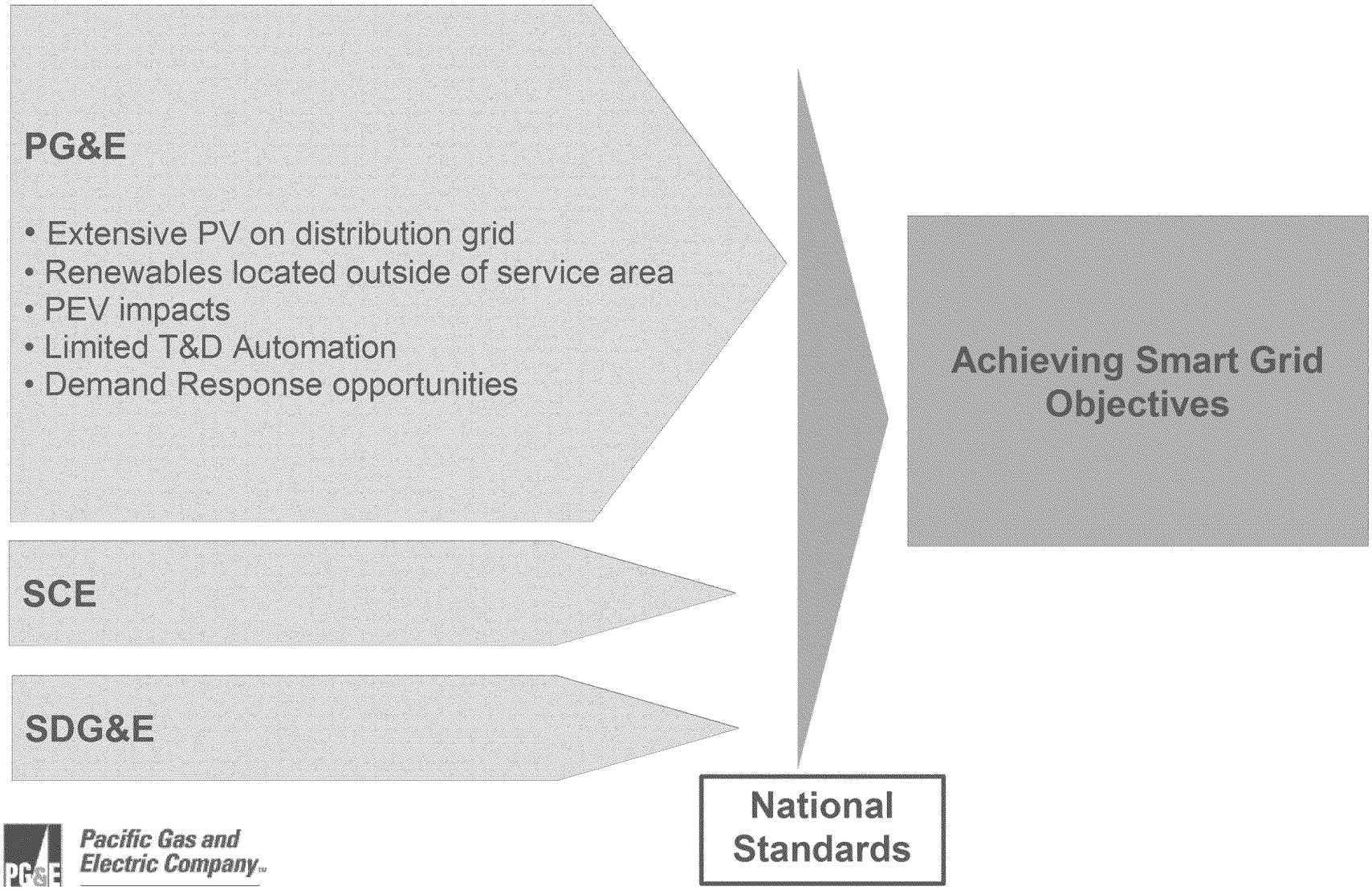
Each Utility has a different starting point and issues in reaching Smart Grid Objectives



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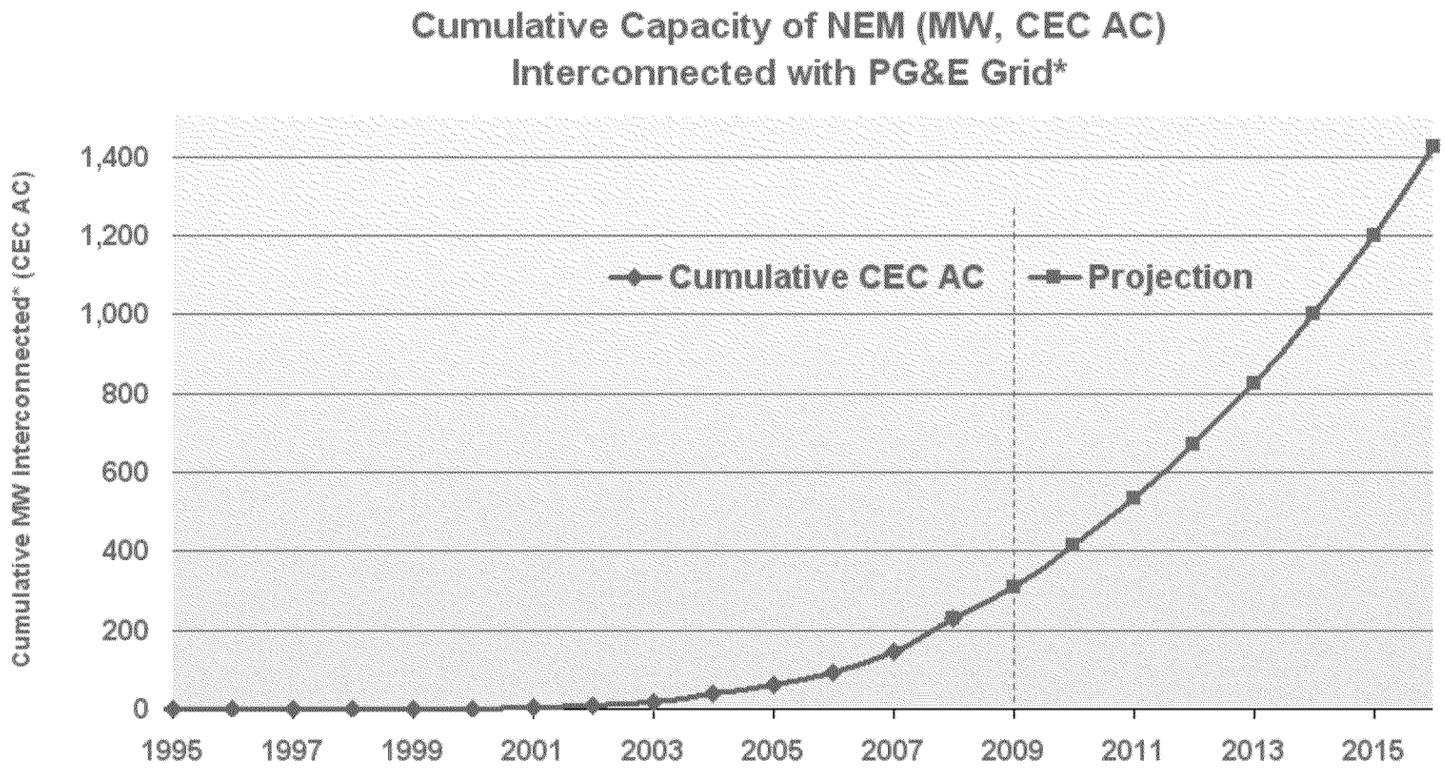
Distributed Generation Is Growing Rapidly



* Includes all NEM projects (PV, W, MT); excludes Non-Export projects

40% of US solar PV interconnections are in PG&E's service territory

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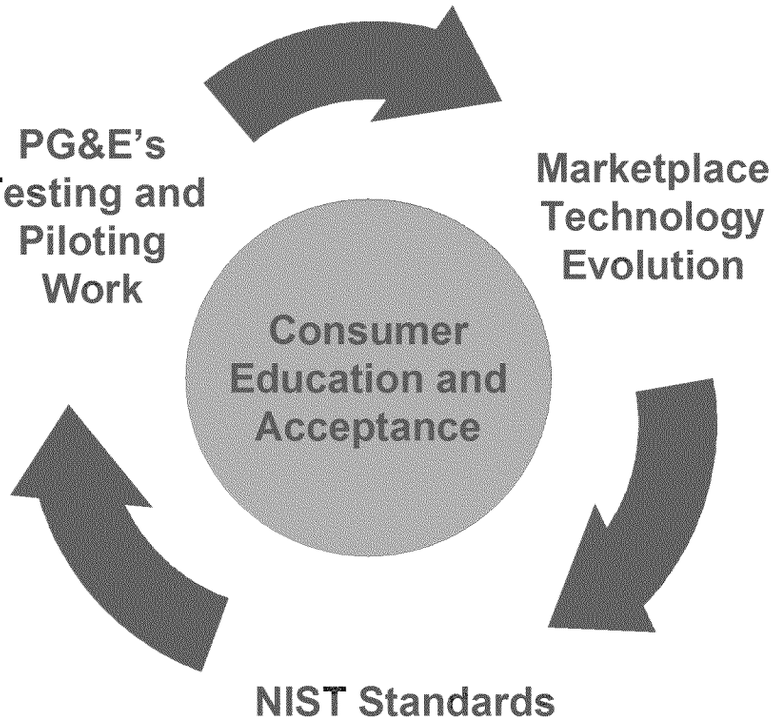
Smart Grid Standards and Metrics

Recommendations

- California should continue to defer to national standard setting, such as by NIST
- National standards ensure backward compatibility and avoid "balkanizing" the development of Smart Grid products and services
- Staff-proposed metrics are a start, but should be refined to focus on current consensus functionality and inter-operability standards and avoid prejudging standards yet to be approved
- PG&E's comments provide initial list of metrics for further discussion

Multiple Inputs will Determine Ultimate Project Timelines and Costs



Smart Grid Projects to incorporate all 3 areas for successful execution

Coordinating Smart Grid Plans and Policies with Other Energy Policy Goals and Programs

Recommendations

- Commission should not establish a "bright line" demarcation between utility and non-utility Smart Grid devices and programs at this early stage, but instead should encourage variety of Smart Grid technologies and providers
- Utilities will need to play role as system integrators or Smart Grid devices and services, particularly in regard to distribution grid reliability and renewable resource integration
- Consumer device-specific incentives should be closely coordinated with other Commission proceedings and market developments, e.g. cost-benefit analyses of demand response programs, electric vehicle programs, customer energy efficiency programs, energy storage programs.

Smart Grid Regulations Need to be Coordinated with Other Policy Decisions

	Federal Policy,2007 EISA, Title XIII	• Established definition and national policy for grid modernization, and Smart Grid Advisory Committee
U.S. DEPARTMENT OF ENERGY	Department of Energy (DOE)	• Office of Energy Efficiency and Renewable Energy (EERE) sets federal policy on energy security, environmental quality and economic vitality, including Smart Grid • EERE administers $16.8 billion from the American Recovery and Reinvestment Act for their programs and initiatives
	FERC	• Issued Smart Grid policy statement in July, 2009, with key points regarding standards, security and cost recovery
	CA State Policy	• AB32 requires that regulations will be put in place to reduce CA's greenhouse gas emissions to 1990 levels, or by 25%, by 2020 • SB17 requires the CPUC to determine a smart grid deployment plan requirements by July 1, 2010 and consider utility deployment plans by July 1, 2011
	CPUC	• Renewable Portfolio Standard requiring 33% renewable energy by 2020 • Smart Grid OIR to comply with EISA and SB17
	CEC	• Smart Grid workshops examining potential demand-side management benefits • PIER Smart Grid research funding

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Cyber-security Standards

Recommendations

- National cyber-security standards and protocols should continue to apply
- California should leverage national standards and not develop its own standards

Next Steps

- National standards
- SB 17 deployment plans
- Specific projects and proposals in GRCs and individual proceedings