

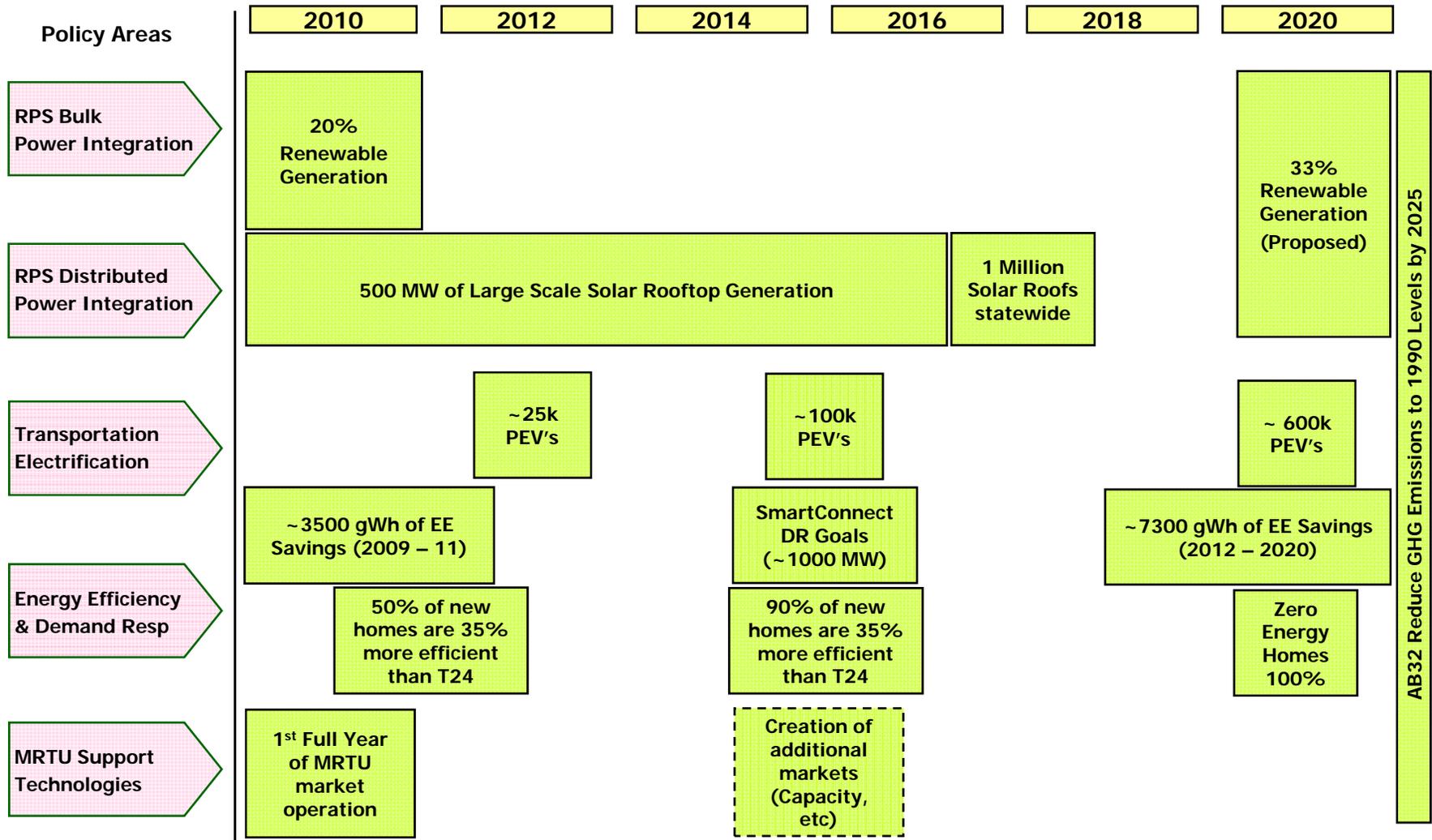
SCE RD&D Approach & Transmission Activity

**ADVANCED
TECHNOLOGY**
Transmission & Distribution Business Unit

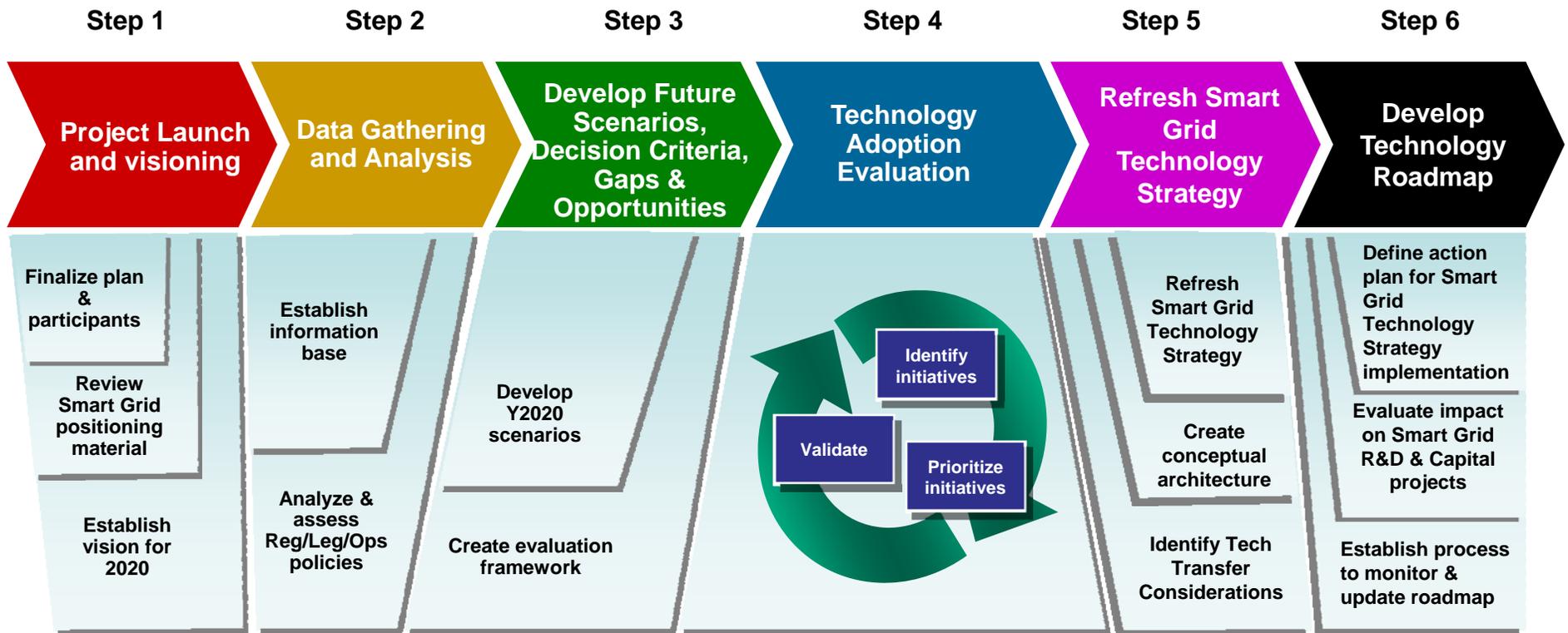


Paul De Martini
September 29, 2009

CA 2020: Energy Policy Initiatives



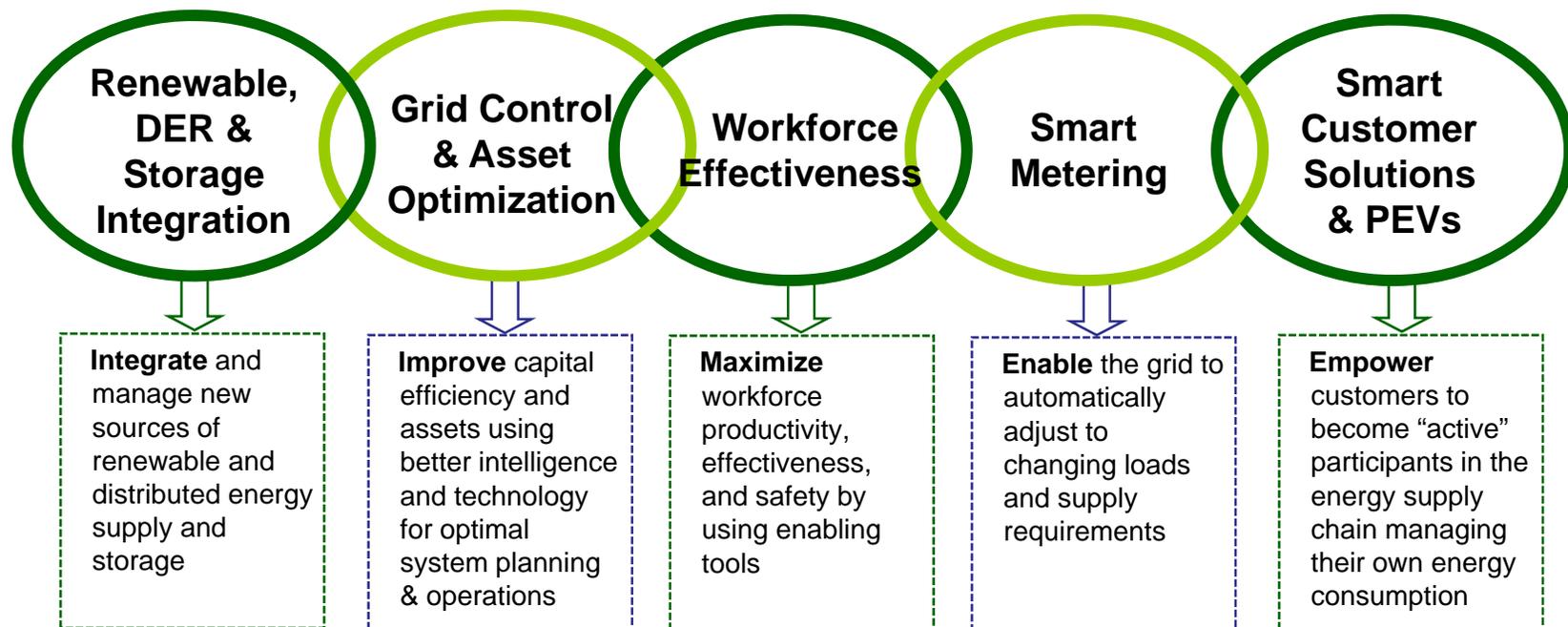
SmartGrid Technology Strategy Refresh and Roadmap Approach



Southern California Edison

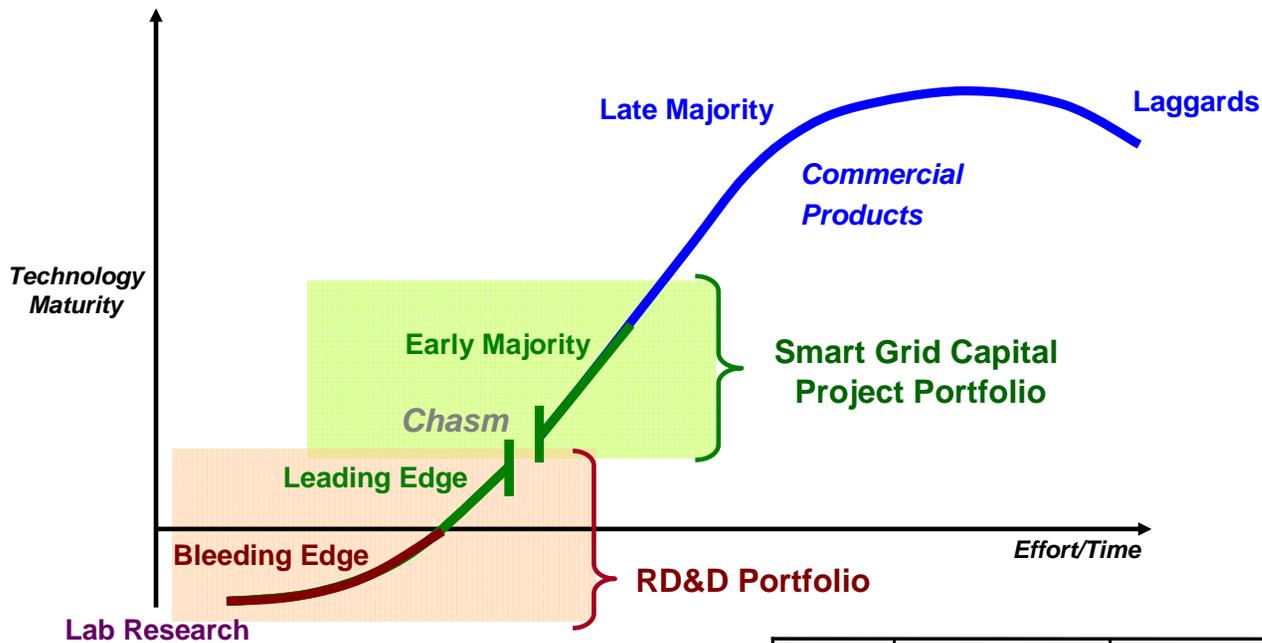
SCE SmartGrid Vision

A Smarter Grid will provide environmental benefits associated with improved asset, system, and energy efficiency



SCE RD&D Approach

Effective strategies for technology adoption and adaptation
 – co-development of emerging technologies by exception



	Research	Development	Demonstration
Level 1			Leading
Level 2		Participative	
Level 3	Monitor		

eSTAR: early Stage Tech Adoption Risk Model

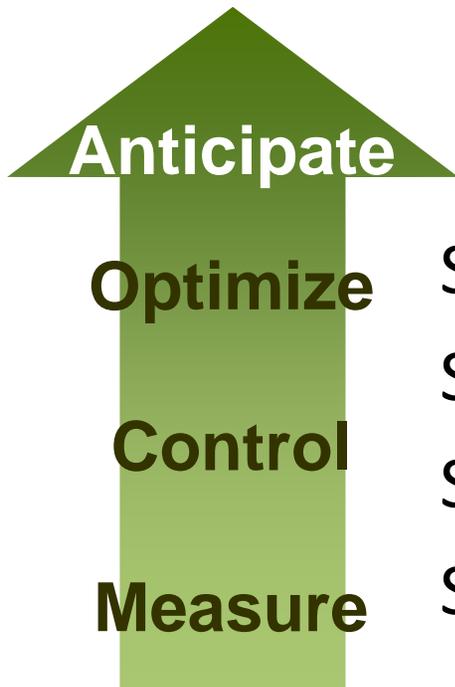
Purpose:

- Develop an early stage technology adoption / adaptation model that assists management in making technology trade-off decisions by quantifying relative risk factors to assess projects & portfolio risk.

Readiness / Risk Factors Definitions:

- **Technology Capability Maturity:** this is the breadth of the scope, complexity and number of features needed to support the solution
- **Market Maturity:** this is the state of development and market maturity of the currently available technology solution
- **Vendor Maturity:** this is the vendors process maturity in product development and support
- **Organization Agility:** this is an organizational agility assessment (the ability to adopt and adapt a new technology)
- **Integration Complexity:** this is the degree to which the solution has to interact with other components or systems.

SCE Smart Grid Development



Stage 4: Micro-control (i.e., V2G)

Stage 3: M2M Automated Controls (i.e., WAC)

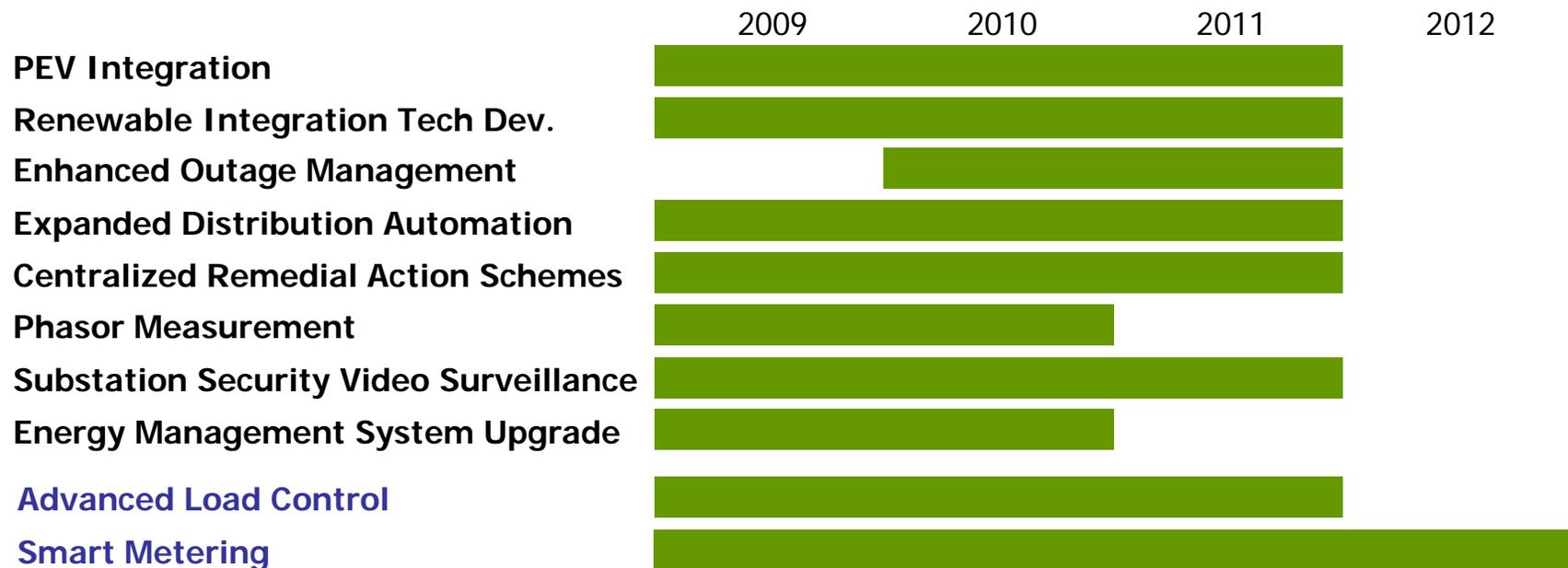
Stage 2: Measurement & Advanced Control

Stage 1: Foundation (1995-2008)

SCE Smart Grid Development

Building on Smart Foundation Built Over the Past Decade

~\$1.5 Billion Capital SmartGrid Development



SCE Transmission R&D

- System Reliability
 - Wide Area Controls Based on Synchrophasors
 - Dynamic System Models for Renewables
 - Smart Grid Cybersecurity
 - Grid Inertia Alternatives
 - Superconducting Fault Current Limiters
 - Electro Magnetic Pulse Mitigation
- Energy Storage
 - Battery
 - CAES
- Transmission & Substation Efficiency
 - Dynamic System Management
 - Centralized Voltage Control
 - Dynamic Rating
 - Active Power Flow Control
 - High-Temp Superconducting Transformers & Conductors



For more information on SCE's Smart Grid strategy, news, and updates, go to: www.sce.com/smartgrid