



# Renewable Electricity Policies in the United States and a Status Report on California's Energy Storage Procurement Target

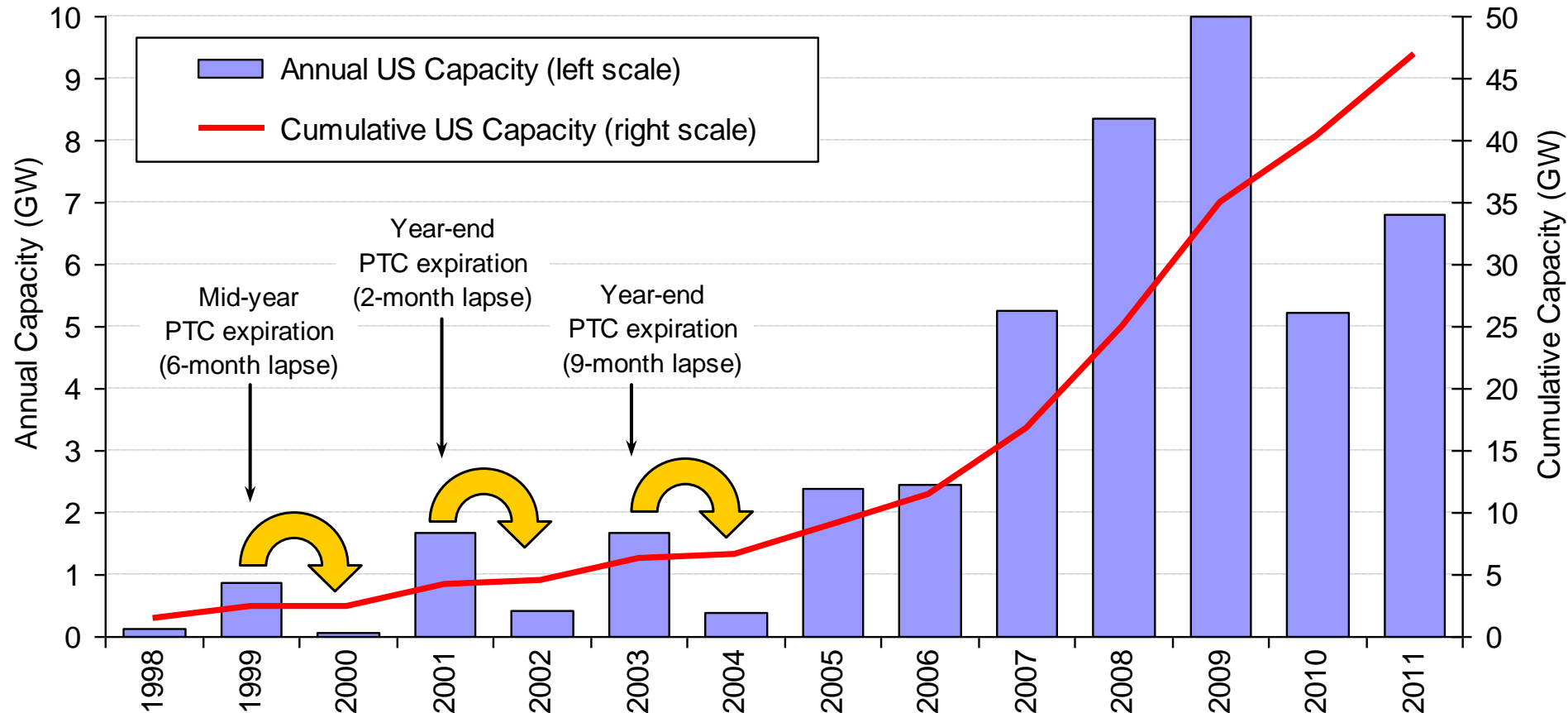
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Policy and Regulatory Frameworks – Towards a Shared Vision

*Hydrogen – A Competitive Energy Storage Medium for Large Scale  
Integration of Renewable Electricity. International Partnership for  
Hydrogen and Fuel Cells in the Economy*

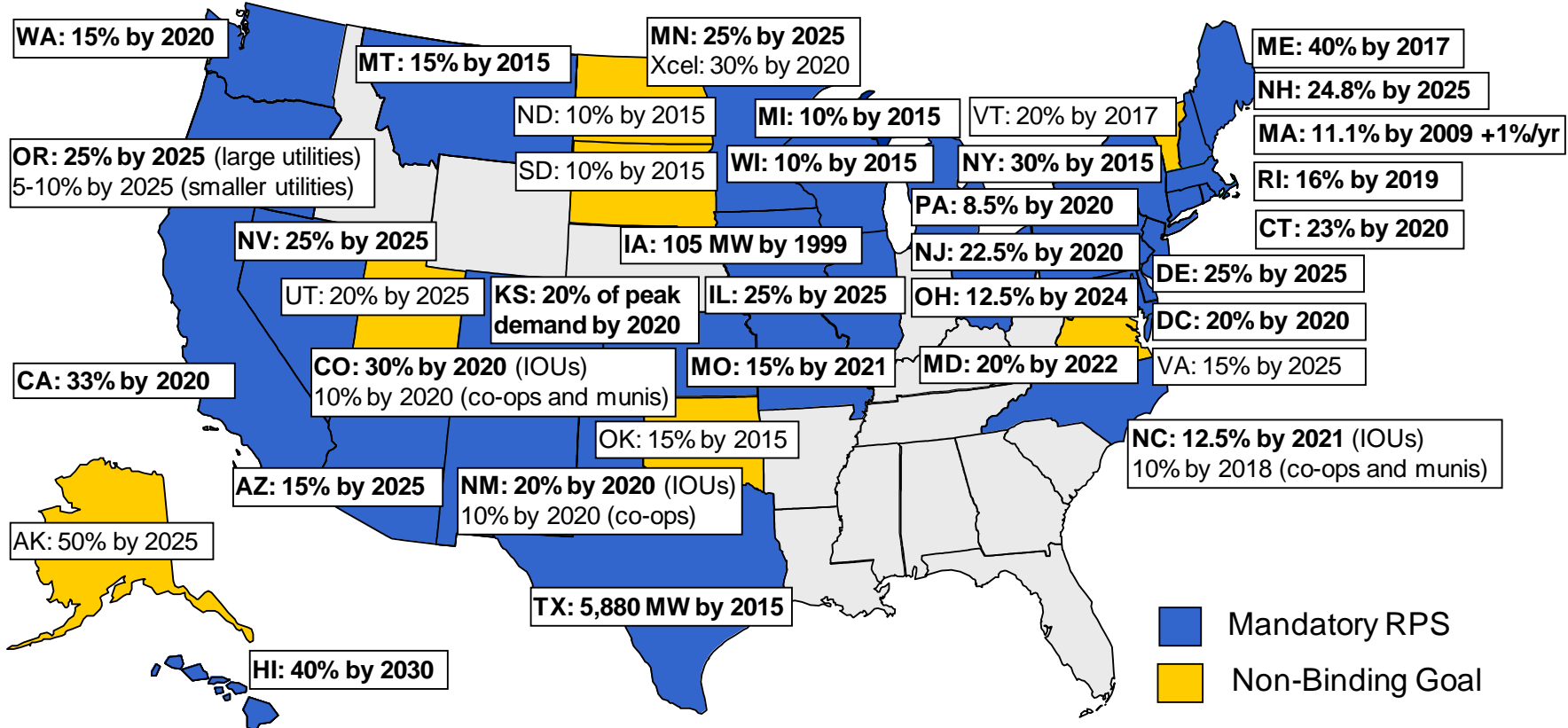
16 November 2012  
Seville, Spain

# The Production Tax Credit Is A Major Driver For The Installation of Wind Generation in the US



Source: Berkeley Lab

# Renewable Portfolio Standards Exist in 29 States and D.C.; 7 More States Have Non-Binding Goals



Source: Berkeley Lab

Notes: Compliance years are designated by the calendar year in which they begin. Mandatory standards or non-binding goals also exist in US territories (American Samoa, Guam, Puerto Rico, US Virgin Islands)

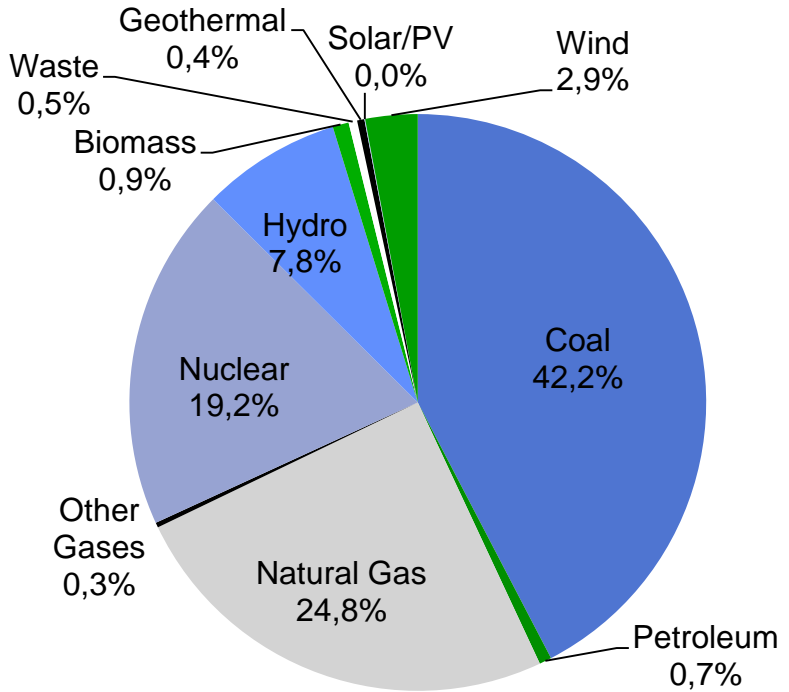
Most policies established through state legislation, but some initially through regulatory action (NY, AZ) or ballot initiatives (CO, MO, WA)

# Renewable Electricity Production from Wind and Solar Has Increased Dramatically in the US



	<b>2001</b> (Million kWh)	<b>2011</b> (Million kWh)	<b>% Increase</b>
<b>U.S. Wind Generation</b>	6,737	119,747	1,777%
<b>U.S. Solar Generation</b>	543	1,814	334%

But Their Contribution to Total US Electricity Production is Modest



Year 2011 Total Electricity Net Generation = 4,106 GWh

Source: U.S. Energy Information Administration

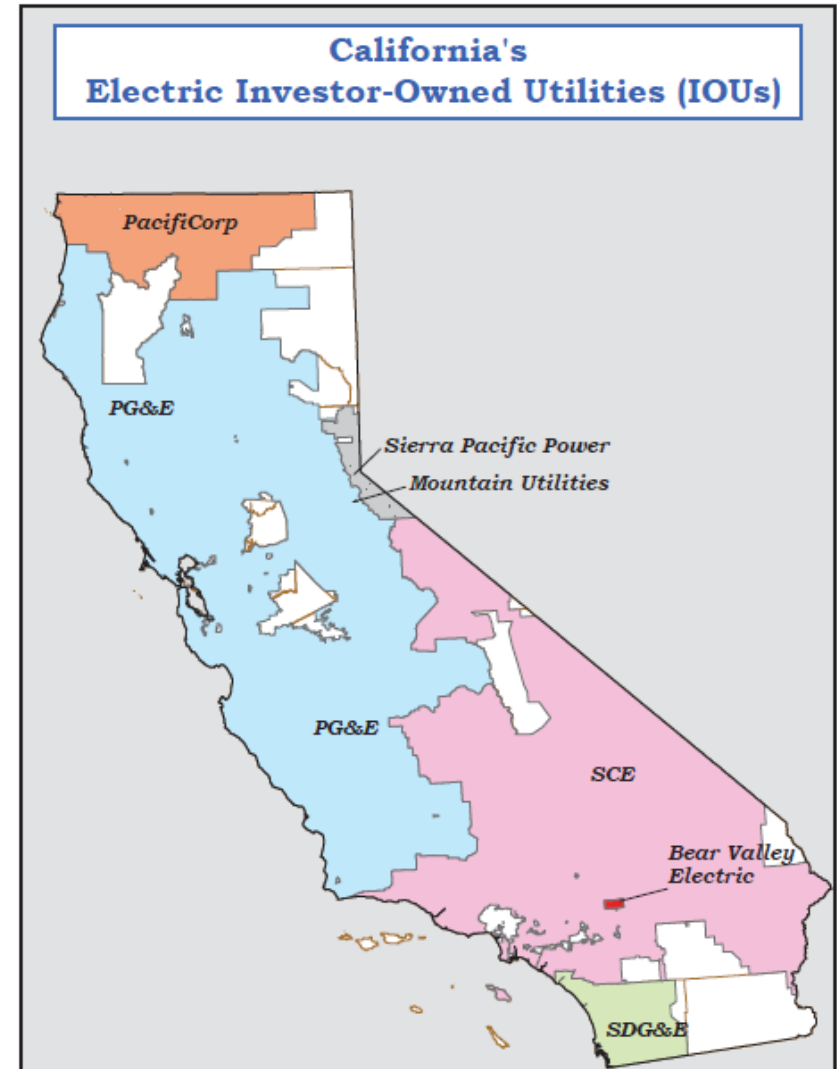
# California Assembly Bill 2514



Directs the California Public Utilities Commission (CPUC), by October 1, 2013, to adopt an energy storage procurement target, ***if it determines such a target to be appropriate***, to be achieved by each investor-owned utility by December 31, 2015, and a second target by December 2020

And to consider a variety of possible policies to encourage the cost-effective deployment of energy storage systems

CPUC has completed a first phase and is currently working on a second (and final) phase of its assessment



### Current Status

CPUC staff have identified 9 barriers to adoption of energy storage

However, the CPUC does not have jurisdiction to address all of them and so it has also identified forums to address the others (CA ISO, CA Energy Commission, FERC)

The policies under consideration include:

1. Establishing resource adequacy value for storage
2. Modifying utility procurement rules
3. Working with CA ISO to allow participation in markets
4. Evaluating the appropriateness of storage procurement targets

### Planned Next Steps

CPUC staff report followed by hearings in Spring/Summer 2013

Recommendation to California state legislature October 1, 2013

<http://www.cpuc.ca.gov/PUC/energy/electric/storage.htm>



Back up slide

# California Public Utilities Commission

## Order Instituting Ratemaking R10-12-007



BARRIER	CPUC RULEMAKING PROCESSES						INTERAGENCY COORDINATION		
	Energy Storage	LTPP	RPS	RA	SGIP, CSI	DSM	FERC	CAISO	CEC
	Sec. 2835, 9620 R.10-12-007	Sec. 454.5 R.12-03-014	Sec. 399.11-399.20	Sec. 380 R.11-10-023	Sec. 2851-2, 379.6	Sec. 379.6, 454.5(c), 743.1, etc			
[1] Lack of definitive system need	Considers setting a storage "need" or procurement target per AB 2514	Determine long-term grid operational need for flexible resources with CAISO analysis	RPS procurement targets could influence energy storage needs	RA requirements could influence energy storage needs	SGIP and CSI could influence energy storage needs	DSM program targets could influence energy storage needs		Use renewable integration study to help determine storage needs	IEPR considers long term needs
[2] Lack of cohesive regulatory framework	Identify regulatory barriers; encourage collaboration across proceedings						NOI, Orders 890 & 719 on regulation compensation for performance and reserve capacity	Collaboration on initiatives for RIMPR, "pay for performance"	Collaboration on Integrated Energy Policy Report
[3] Evolving markets and market product definitions	Identify proceedings affecting storage market participation							Encourage technology-neutral policies and market design (RIMPR, pay for performance)	
[4] Resource Adequacy (RA) accounting	Determine uses where storage can be eligible for RA and collaborate with RA proceeding		RA value for storage sited at RPS generation should be determined by RA proceeding	Determine RA methods and establish rules for storage eligibility for RA value	Programs have impact on RA need and value	Programs have impact on RA need and value		May develop flexible attributes that impact RA methods	
[5] Lack of cost-effectiveness (C/E) evaluation method	Determine a cost-effectiveness framework for energy storage			RA value for storage may provide input to C/E framework	Existing program specific C/E methodologies may be relevant for some storage uses	SPM for evaluating demand-side programs may inform development of energy storage C/E framework		Establish methodology for calculating integration costs	
[6] Lack of cost recovery policy (cost- vs. market-based)	Consider how storage uses can inform CPUC cost recovery policies and consider revisions to allow multi-use storage	Consider cost-recovery policies for storage uses associated with utility power transactions	Consider incorporating avoided integration costs into offer valuation			Consider cost-recovery policies for storage uses associated with DSM	Clarify classification and cost-recovery rules for multi-use storage	Clarify renewables integration costs, cost causation allocation	
[7] Lack of cost transparency and price signals	Identify regulatory forums for improving cost & price signals, including within rate design	Improve cost-transparency within utility procurement planning and contract evaluation process	Allow incorporating avoided integration costs into offer valuation					Evaluate who should bear cost of intermittency through RIMPR	
[8] Lack of commercial operating experience	Considers targeted RD&D; coordinate with R.11-03-012 and R.11-10-003				Advance commercialization of emerging storage technologies	Utility program to encourage customer-owned PLS storage (A.11-03-001)			Storage 2020 study reviews status of storage technology development
[9] Lack of well-defined interconnection processes	Interconnection of distribution-level energy storage is currently being addressed in the OIR proceeding related to modifying to Rule 21 (R.11-09-011)						Set FERC-jurisdictional interconnection rules	Reform generation interconnection process	

**Storage Barriers Regulatory Matrix**

(Note: Grey cells indicate primary proceeding to address barrier. White cells indicate other proceedings that may influence resolution of barrier.)

<sup>1</sup>RIMPR = Renewable Integration Market & Product Review. <sup>2</sup>OIR to Address Utility Cost and Revenue Issues Associated with GHG Emissions.

<sup>3</sup>OIR on CPUC motion to determine the impact on public benefits associated with the expiration of ratepayer charges pursuant to PU Code Section 399.8)