State-Federal RPS Collaborative
Clean Energy States Alliance

America's Power Plan
Utility Business Models and Finance

Hosted by
Warren Leon, Director, CESA

September 30, 2013

CleanEnergy States Alliance

CleanEnergyGroup
Innovation in Finance, Technology & Policy

Housekeeping

- All participants will be in listen-only mode throughout the broadcast.
- We suggest that you connect to the audio portion of the webinar using VOIP and your computer's speakers or USB-type headset. You can also connect by telephone. If by phone, please expand the Audio section of the webinar console to select "Telephone" to see and enter the PIN number shown on there onto your telephone keypad.
- You can enter questions for today's event by typing them into the "Question Box" on the webinar console. We will pose your questions, as time allows, following the presentation.
- This webinar is being recorded and will be made available after the event on the CESA website at

  www.cleanenergystates.org/events/

About CESA

Clean Energy States Alliance (CESA) is a national nonprofit organization working to implement smart clean energy policies, programs, technology innovation, and financing tools, primarily at the state level. At our core is a national network of public agencies that are individually and collectively working to advance clean energy.

State-Federal RPS Collaborative

- With funding from the Energy Foundation and the US Department of Energy, CESA facilitates the **Collaborative**.
- Includes **state RPS administrators**, **federal agency representatives**, and other stakeholders.
- Advances dialogue and learning about RPS programs by **examining the challenges and potential solutions** for successful implementation of state RPS programs, including **identification of best practices**.
- To sign up for the Collaborative listserve to get the **monthly newsletter** and announcements of **upcoming events**, see: www.cleanenergystates.org/projects/state-federal-rps-collaborative

Today's Webinar: America's Power Plan

- A project to propose a path to overcoming regulatory, legal, and economic barriers to cleaner more-efficient energy
- 150 top energy experts participated
- The premise: "We are at a pivotal point in America's energy history. Decisions and investments made in the next decade will shape the course of the power sector, the economy, national security and the climate for decades to come."
- An overview paper and seven focused papers
- "Together, these papers provide a policy toolbox to guide decision makers on utility business models, finance, market design, transmission and distribution policies, distributed energy resource integration and siting."
- Curated by the Energy Foundation in partnership with Energy Innovation, an energy and environmental policy firm

Two Webinars for CESA/RPS Collaborative

- Will cover four of the seven papers
  - Today
    - Utility Business Models
    - Finance
  - Wednesday
    - Wholesale Market Design
    - Distributed Generation

http://americaspowerplan.com/

Today's Guest Speakers

- Ronald L. Lehr, Attorney and former Chairman of the Colorado Public Utilities Commission

  "Utility and Regulatory Models for the Modern Era"

- Todd Foley, Senior Vice President of Policy and Government Relations, American Council On Renewable Energy

  "Finance Policy: Removing Investment Barriers and Managing Risk"

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Todd Foley

Senior VP

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America's Power Plan:

"Financing America's Clean Energy Future"

Key Points:

- **A Clean Energy Future is Within Reach!**
  - Energy security
  - Mitigate global, regional & local environmental risks
  - Build on recent progress
- **Greater Levels of Private Investment Needed**
  - Diversify & save on fuel costs
  - Hedge against price volatility
  - Create new economic opportunities
- **Requires Effective & Long-term Policy, Regulatory & Market Structures to Drive Private Investment**
  - Eliminate barriers to cost-effective financing
  - Enable investors to realize full value of new assets
  - Focus on managing electric sector risks
  - A suite of policies

ACORE Encompasses All Forms of Renewable Energy

ACORE
American Council On Renewable Energy

Mission: ACORE is dedicated to building a secure and prosperous America with clean, renewable energy

www.acore.org/membership

ACORE
American Council On Renewable Energy

ACORE's 400+ Organizational Members

Strategy to Assemble All the Players Necessary to Make Renewable Energy Successful in the U.S.

Addressing:

Finance

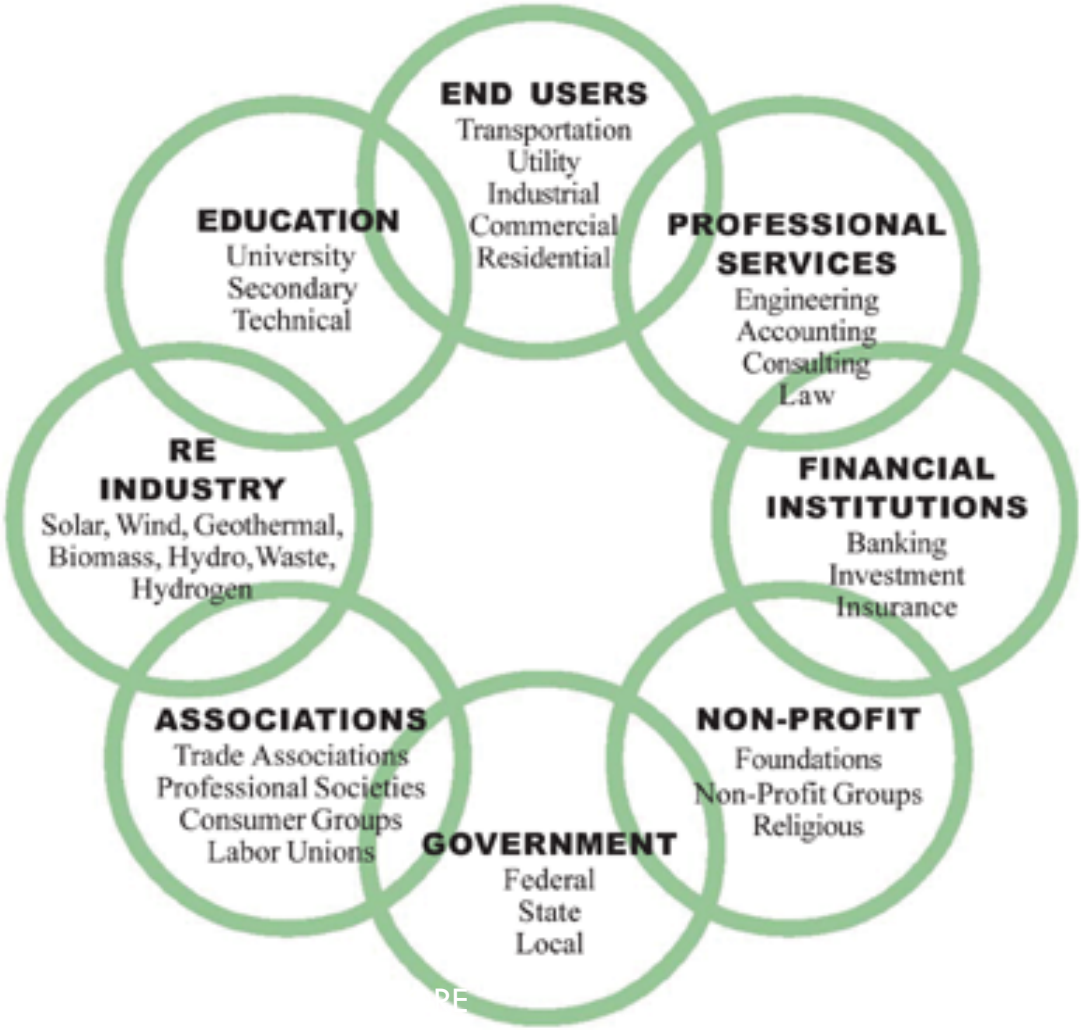
Policy

Markets

Technology

Purpose:

Education



Clean Energy Policy, Market Growth & Cost Reduction: Driving Massive Private Capital Investment!

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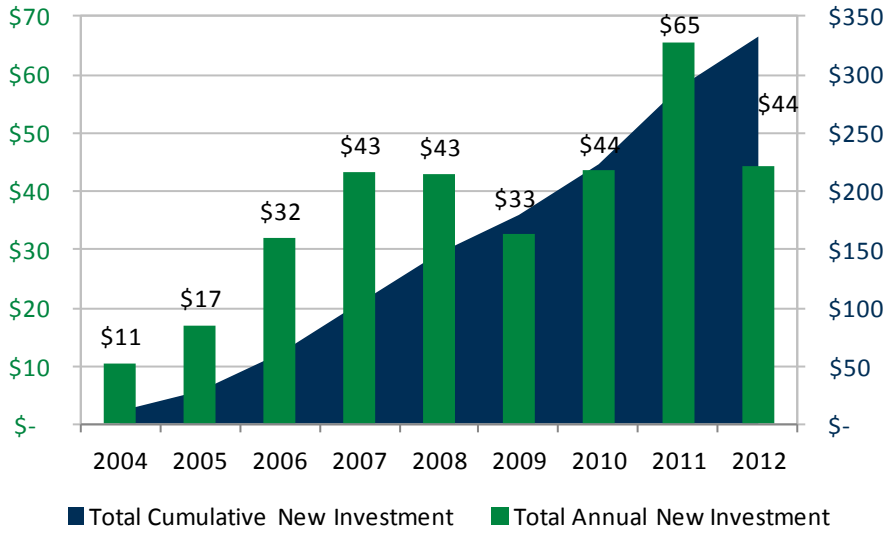
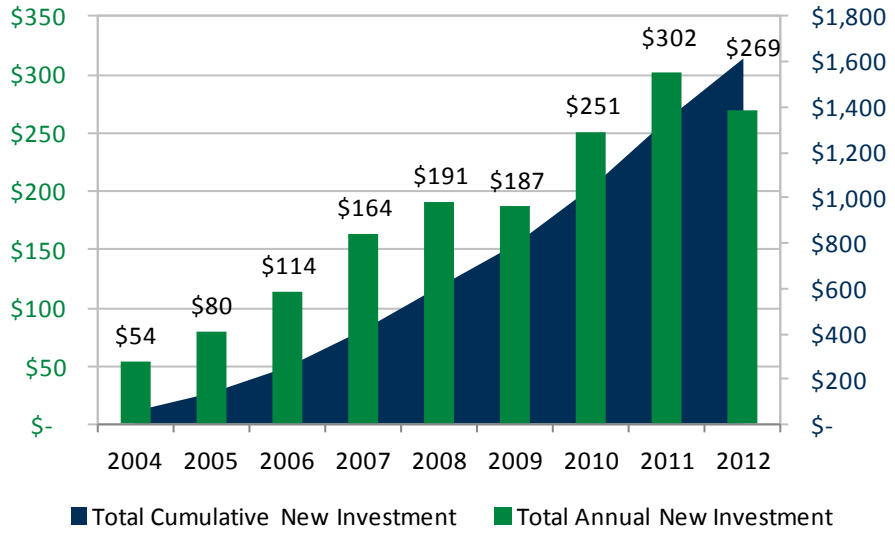
- The United States has implemented policies that have very successfully attracted massive sums of private capital to the burgeoning renewable energy industry.
- Over $300 billion has been invested in the United States clean energy sector since 2004.
- This capital has been invested to create domestic supply chains that support both our domestic energy market and the global energy technology industry, which has attracted nearly $1.7 trillion in global new investment since 2004.

U.S. - Total New Clean Energy Investment ($ billion)



Global - Total New Clean Energy Investment ($ billion)



Sources: Bloomberg New Energy Finance; Hudson Analysis

Industry Growth is Driving Dramatic Cost Reductions

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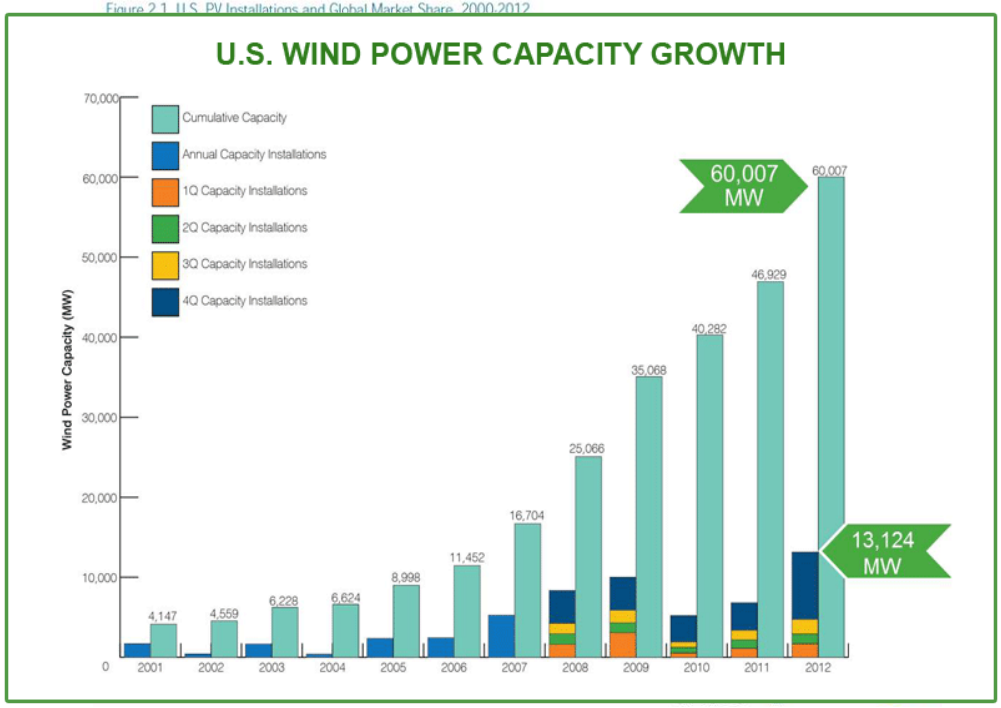
Wind Capacity Growth



Solar Capacity Growth

Installations (MWdc)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Residential	1	5	11	15	24	27	38	58	82	164	246	302	488
Non-Residential	2	3	9	27	32	51	67	93	200	213	336	826	1,043
Utility	0	3	2	3	2	1	0	9	16	58	267	760	1,781
Total Installations	4	11	23	45	58	79	105	160	298	435	848	1,887	3,313

49% of All New U.S. Power Capacity in 2012 from Renewable Energy - FERC

US PREF
U.S. Partnership for Renewable Energy Finance

Dramatic Cost Reduction:
Even Relative to Conventional Sources!

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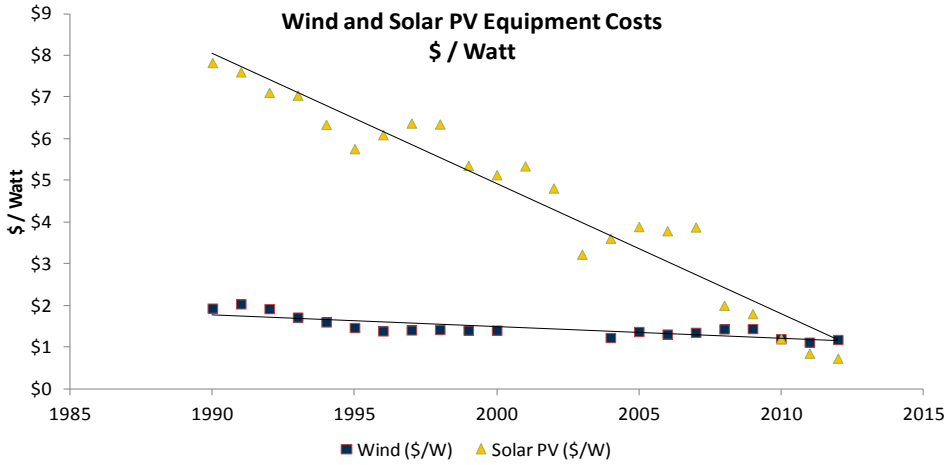
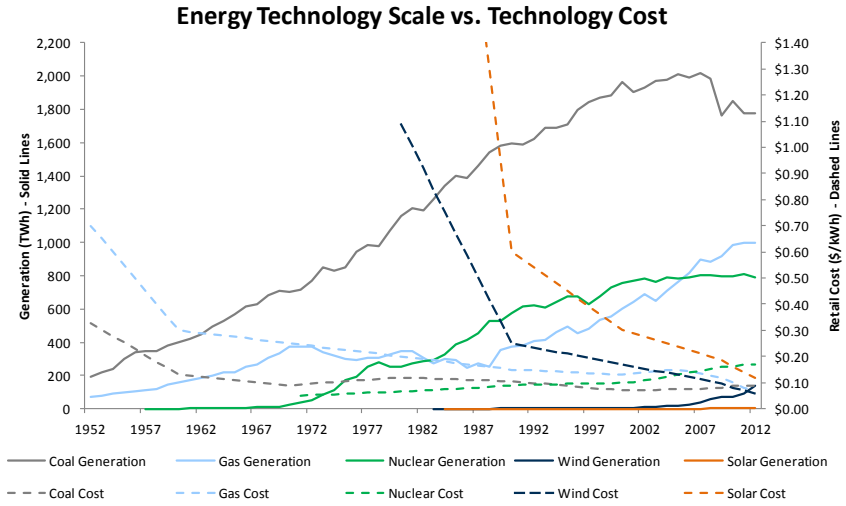
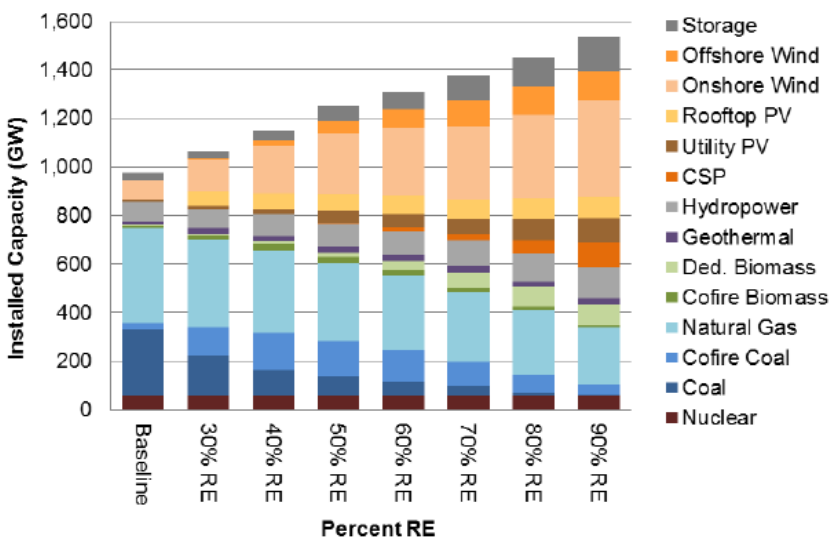
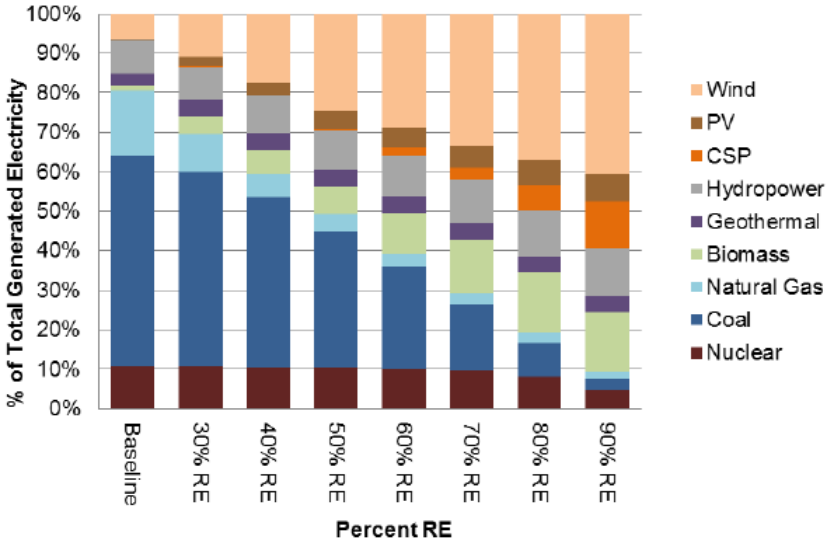




Installed capacity and generation in 2050 as renewable electricity levels increase

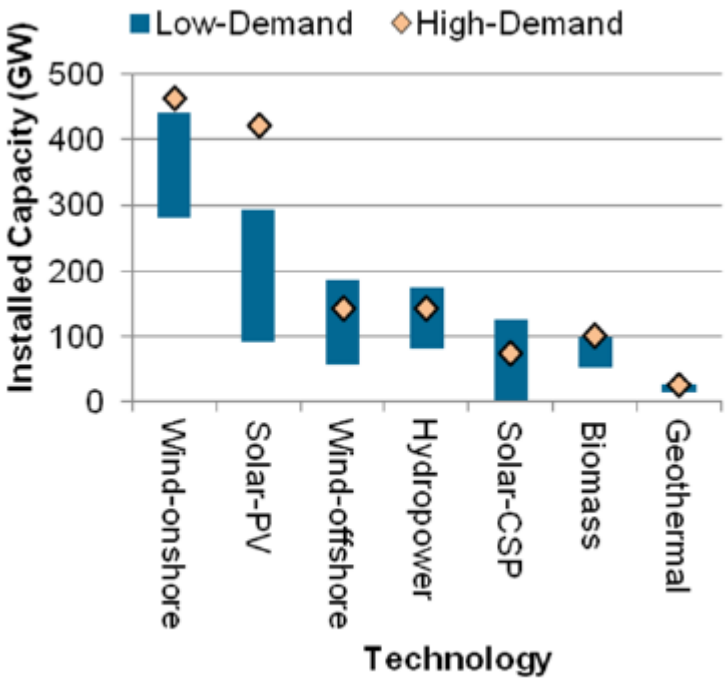


(a) Capacity mix in 2050 for the exploratory scenarios



(b) Generation mix in 2050 for the exploratory scenarios

Range of 2050 installed capacity



(a) 2050 installed capacity by technology

Annual capacity additions needed: ~25 to 70 GW/Year

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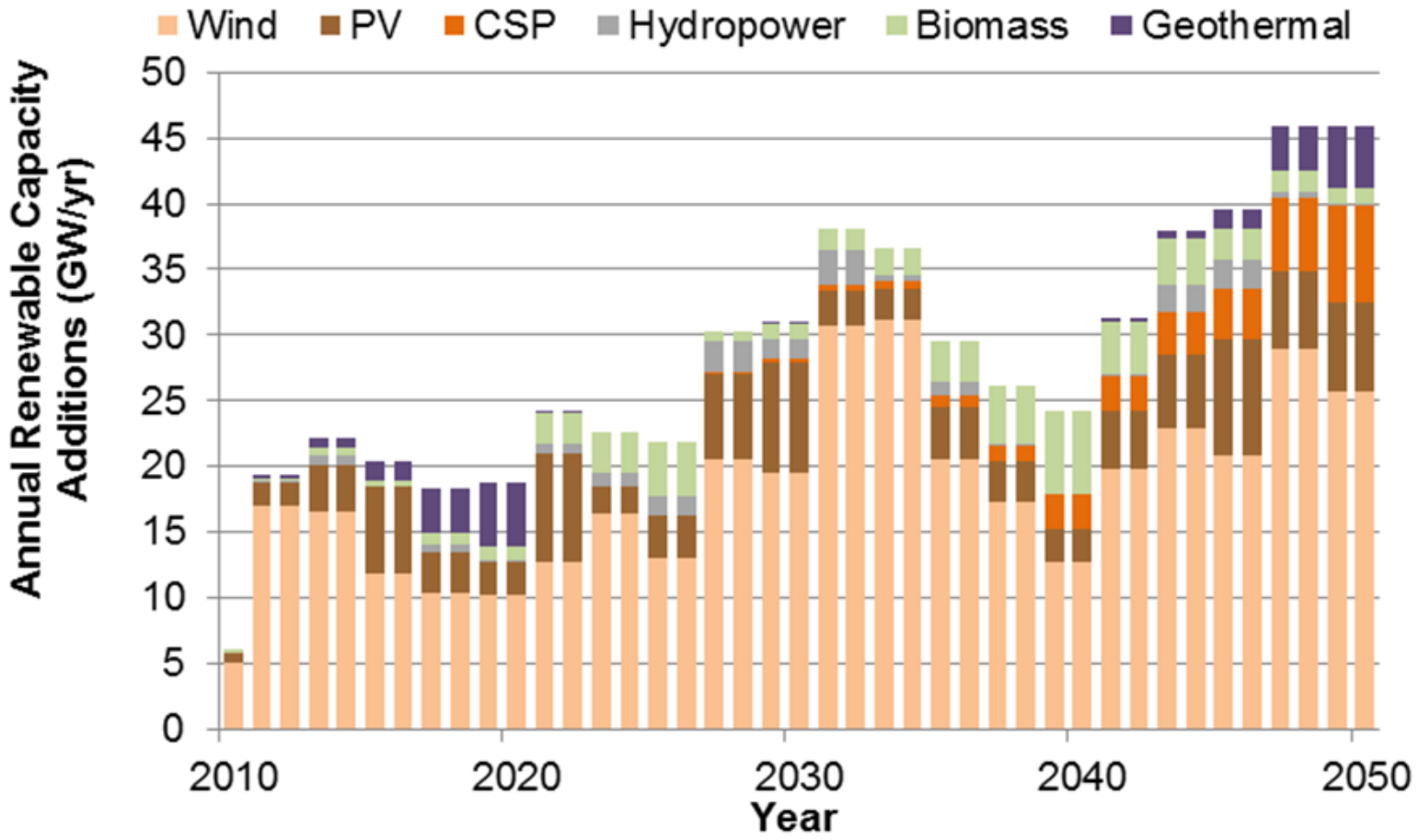

Expanded storage capacity: ~140 GW, $4-5 Billion/year

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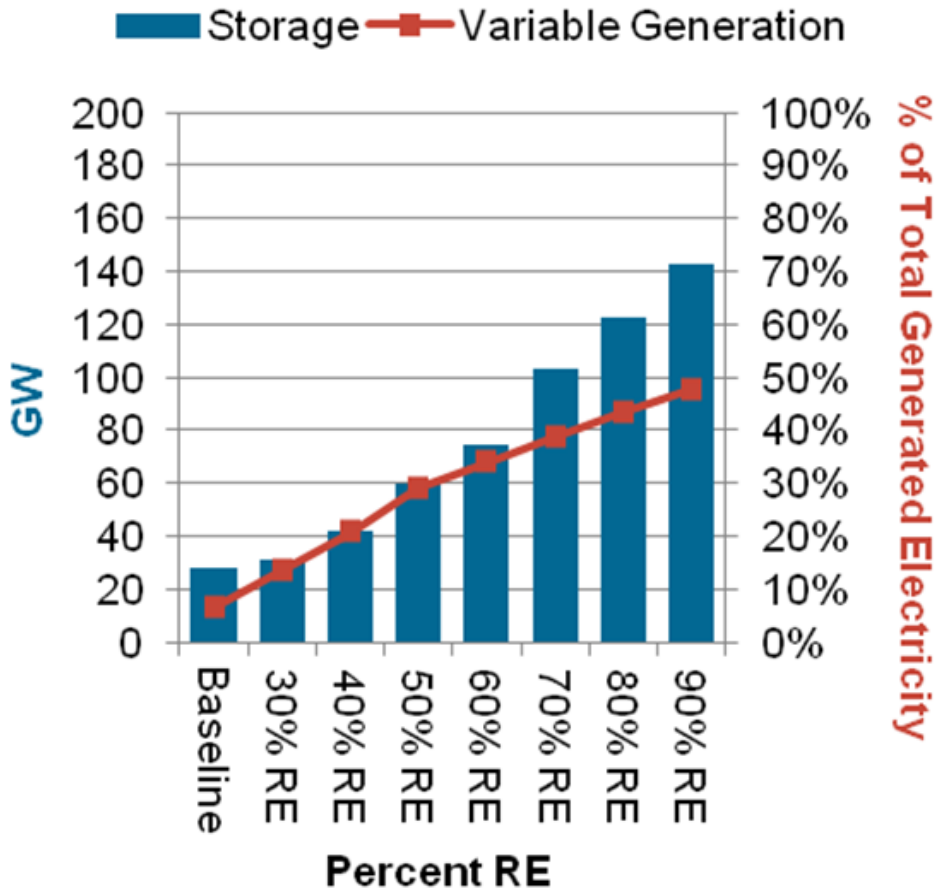
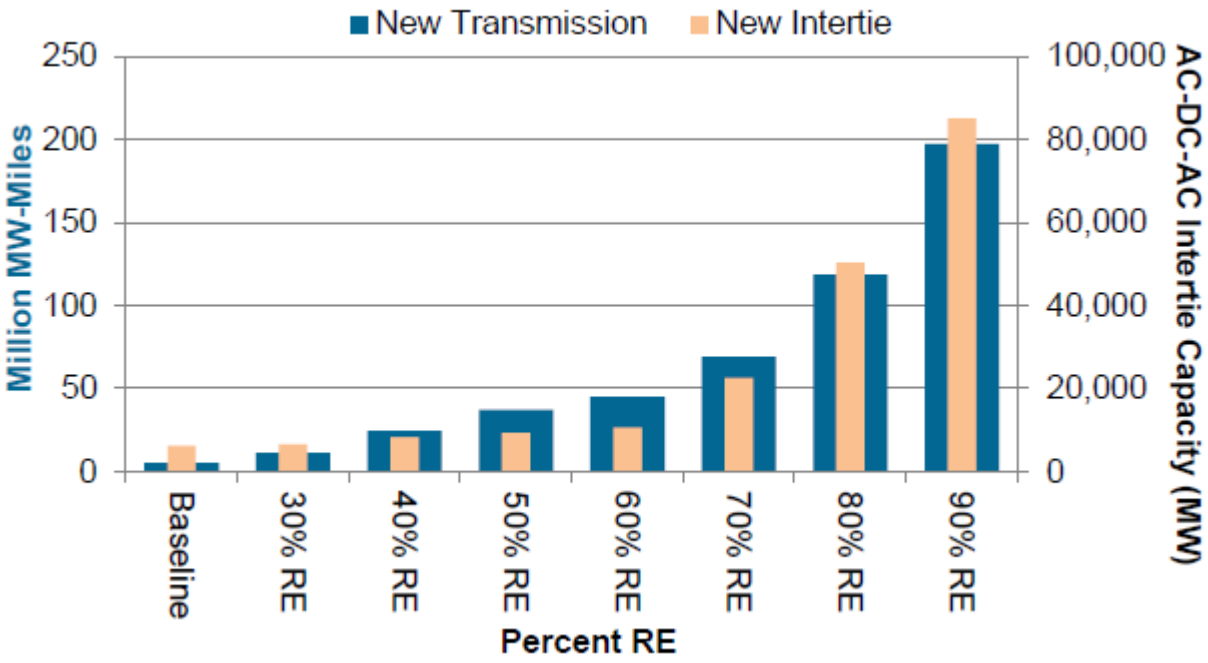
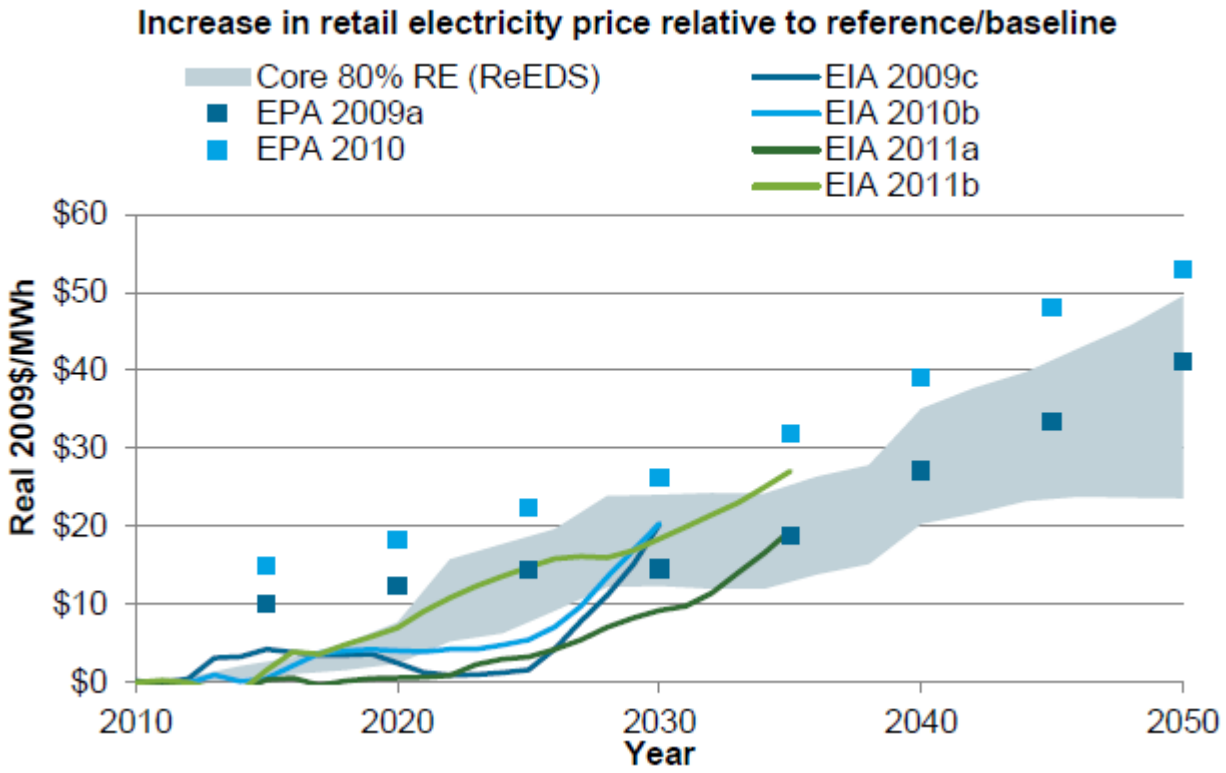


New transmission capacity requirements



Average increase in retail electricity rates



Current Barriers to Investment

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1. Markets are designed for financing conventional generation & undervalue renewable energy
2. Low energy demand discourages new investment
3. Current low price of natural gas
4. Stranded assets may raise financing costs

Policies, Regulations & Market Structures to Drive Greater Amounts of Lower-Cost Capital: Transition from "fuel-based" to more capital-intensive renewable energy generation

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- **Key elements to align policies**
  - Increase rewards to compensate investors for services their assets provide not currently valued by markets
  - Reduce risks: mitigate or manage them by allocating who most effectively can manage
- **Long-term policy certainty**
  - Modify existing tax credits - permanent; refundable; taxable cash grants
  - Stable net metering rules
  - RES, CES
- **Enable access to larger, more liquid financing markets**
  - Private to public equity – MLPs, REITs
  - Securitization
  - Clean Energy Bonds
- **Power Market & Utility Value of Renewable Energy**
  - Utility ownership
  - Long-term contracts for DG, 3rd-party ownership
  - Price on carbon to capture environmental costs
  - Value-based & forward pricing on flexibility services: peak shaving, demand response, DG, storage, etc.
  - Continue IOU access to public equity markets through beneficial treatment of dividends

Conclusion

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- Clean, renewable energy is increasingly competitive & capable of scaling
- Policy, regulations, & markets built for another time, need to be adapted to accommodate modern technology & infrastructure needs
- Capital markets will respond

America's Power Plan

Utility and Regulatory Models for the Modern Era

Clean Energy States Alliance Webinar
September 30, 2013
Ronald L. Lehr

Thesis: Pressures on utilities to change

- Aging plant
  - Brattle Group: $2 trillion investment over next 20 years
- Tougher environmental requirements
  - Criteria pollutants
  - Greenhouse gases
  - Coal ash
  - Water restrictions
- Flat to declining sales of electricity

Thesis: Pressures on utilities to change

- New technologies
  - Smarter grid
  - Distributed generation: solar, CHP, micro turbines
  - Electric vehicles
  - Low cost wind—Xcel example
- Changing consumer requirements
  - Disintermediation by third parties
- Weakened industry financial metrics

- **Pressures leading to "restructuring 2.0?"**

What we've heard from utility CEOs:

- CEOs want a clearer, more consistent direction from state energy policies
- Utilities have inadequate incentives for innovation, firm level efficiency
- Commissions need a better understanding of the utility business and its needs
- Utilities want certainty on climate policy
- Utilities want healthier working relationships with commissioners and staff

What we've heard from commissioners:

- A primary concern is with increasing utility rates
- Regulators are open to modifying the regulatory model; looking for ideas
- Some commissioners are dissatisfied with the adversarial process
- Many commissioners face severe barriers to communications with stakeholders, and even fellow commissioners
- Commissions have inadequate resources

Three Possible Utility Roles

- Minimum: markets provide power and services, utilities manage wires
- Moderate: “orchestrator” “smart integrator”
  - Risk aware planning; regulated “make or buy” decisions; consumer service packages
- Maximum: Nebraska, Moorland Commission
  - Disaster recovery
  - Climate adaptation

Three Potential Regulatory Models

- The UK “RIIO” model
  - Price cap built on RPI-X, with decoupling
  - Output regulation
    - Reliability, Environmental, Innovation, Price, Efficiency, Social Responsibility
- The “Iowa Model”
  - Seventeen years of constant rates, settlements, diminished focus on earnings levels
- The “Grand Bargain”
  - Comprehensive multi-year output-oriented deal
  - Regulator led

Thanks for inviting me.

I look forward to our discussion.

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