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ENERGY INFRASTRUCTURE NEEDS AND OPTIONS

*2015 EIA Energy Conference
June 15-16, 2015*

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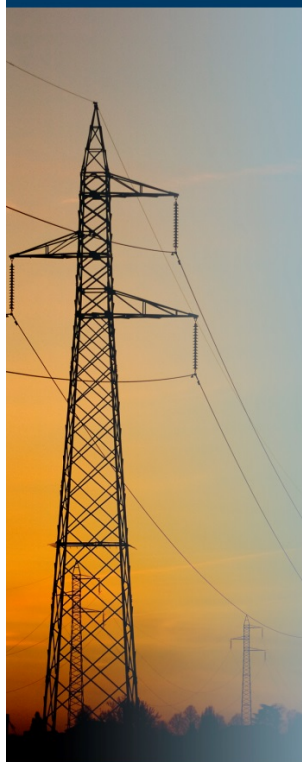


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- ▼ **We are analysts, not lobbyists.** We do not represent corporate or partisan interests in any fashion.



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OUR FOCUS



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- ▼ Our coverage of fuels, technologies and issues includes:
 - Alternative fuels and vehicles
 - Alternative power and efficiency
 - Climate change and emissions
 - Geopolitical risk and international policy
 - Oil, natural gas and refined products
 - Power generation, coal mining and nuclear power
 - Electric transmission and power markets
 - Natural gas, oil and refined product pipelines
 - U.S. energy policy, economics and tax policy.

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RISKS AND DISCLOSURES



Risks

Legislative, regulatory and diplomatic agendas are subject to change.

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I hereby certify that the views expressed in this presentation accurately reflect my personal views as of the date of this presentation.

I further certify that no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views contained in this presentation.

By: *Christine Tezak*

Disclosures

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RISKS AND DISCLOSURES



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REGIONALIZATION ADVANCES

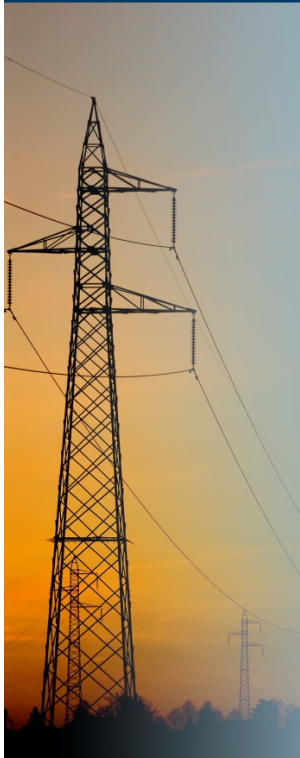


▼ Transmission

- Efficiency grows from broader generation dispatch
- Consistent with federal tax policy fostering utility-scale renewables
- Seeks to leverage regional grid structures and interstate collaboration
- Consistent with regional approaches to air emissions

▼ Pipelines

- Realignment of existing infrastructure
- New infrastructure to support new supply resources



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PRESIDENT OBAMA'S ENERGY POLICY LEGACY



- ▼ The Big Picture
 - “Transformation” + “all of the above” = “give a little, take a little”
- ▼ Transitioning From Scarcity to Adequacy
 - “Safe and responsible” production
 - Reforms for “fair share,” “diligent development”
 - “Some, not all” export policy
- ▼ The *Climate Action Plan*
 - A two-fer: domestic and international legacies
 - Endangerment → Tailoring/Timing → Standards
 - Continuity a function of next President

REGIONALIZATION QUESTIONED



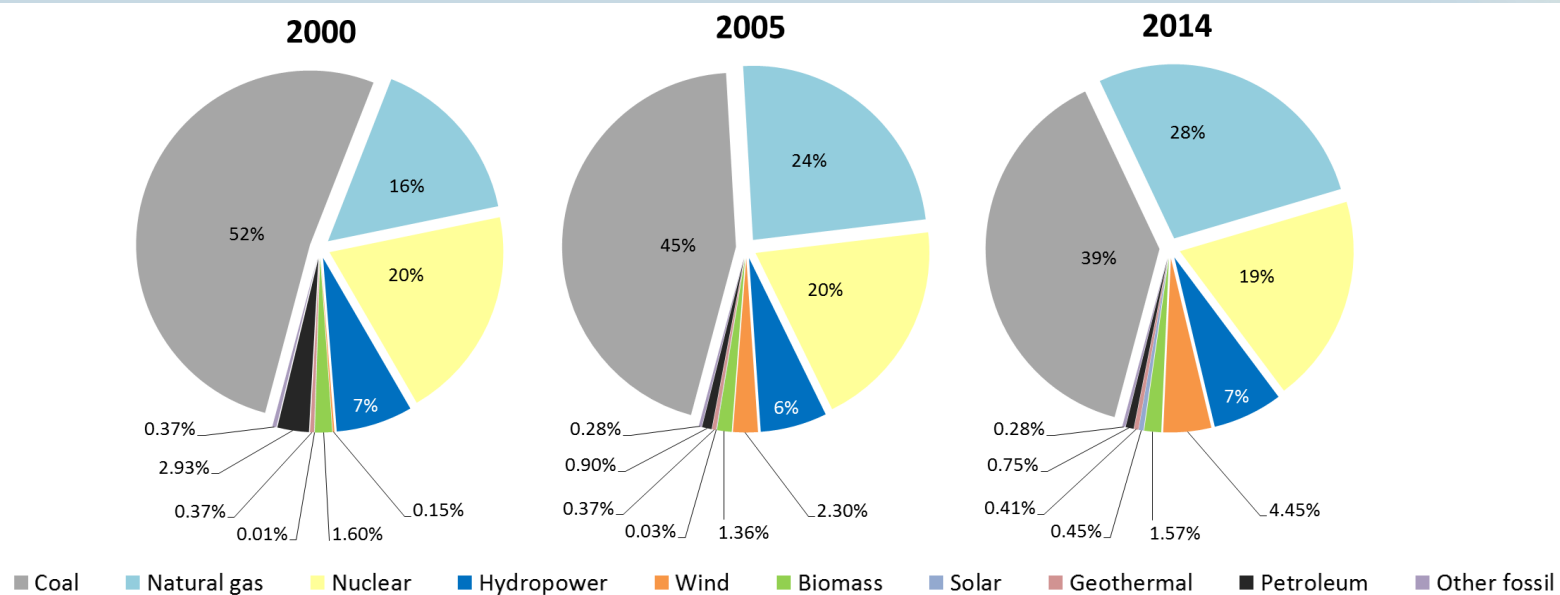
- ▼ New resource discoveries change supply options
 - Natural gas displaces coal
 - On-shore gas resources closer to load change pipeline flows
 - Light crude surplus in a heavy crude-aligned refinery market
- ▼ Long distances present vulnerabilities for resiliency
 - Regional strategic reserves of refined fuel contemplated
 - Renewables policy fits into decentralized power generation
- ▼ Environmental policy
 - Greater efficiency can change demand growth
 - Electrification = good for emissions?

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AFFORDABLE GAS, POLICY-DRIVEN RENEWABLES



The Shift In the U.S. Power Portfolio Is Well Underway (~12% *de facto* RPS)



Source: U.S. Energy Information Administration

EPA's *CLEAN POWER PLAN*



- ▼ Complements unit-specific standards for new units
- ▼ Encourages regional trading of GHGs
 - performance standard (based on lbs CO₂e/MWh)
 - quantified mass budget (metric tonnes/Y)
- ▼ Relies on “outside-the-fence actions” to lower effective GHG intensity of existing fleet
 - Re-dispatch of natural gas to replace coal generation
 - Increased reliance on renewable power
 - Energy efficiency and demand response to lower overall usage
- ▼ Scheduled for finalization this summer for compliance beginning in 2020 toward hard targets in 2030

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THE *QUADRENNIAL ENERGY REVIEW*



- ▼ In its inaugural report, the U.S. Department of Energy
 - Finds that annual transmission spending has likely peaked
 - Favors a shift toward a “grid of the future” that is more geared to supporting decentralized/distributed generation than central station power (even of the renewable variety)
 - Expects gas transmission spending likely to level off as well, but investment is needed to stop leaks in distribution system
 - Superstorm Sandy shapes the perspective as “Resilience” is the new watchword in infrastructure
 - Addresses shared infrastructure and the need to process permits efficiently and effectively

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KEY TRENDS WE SEE



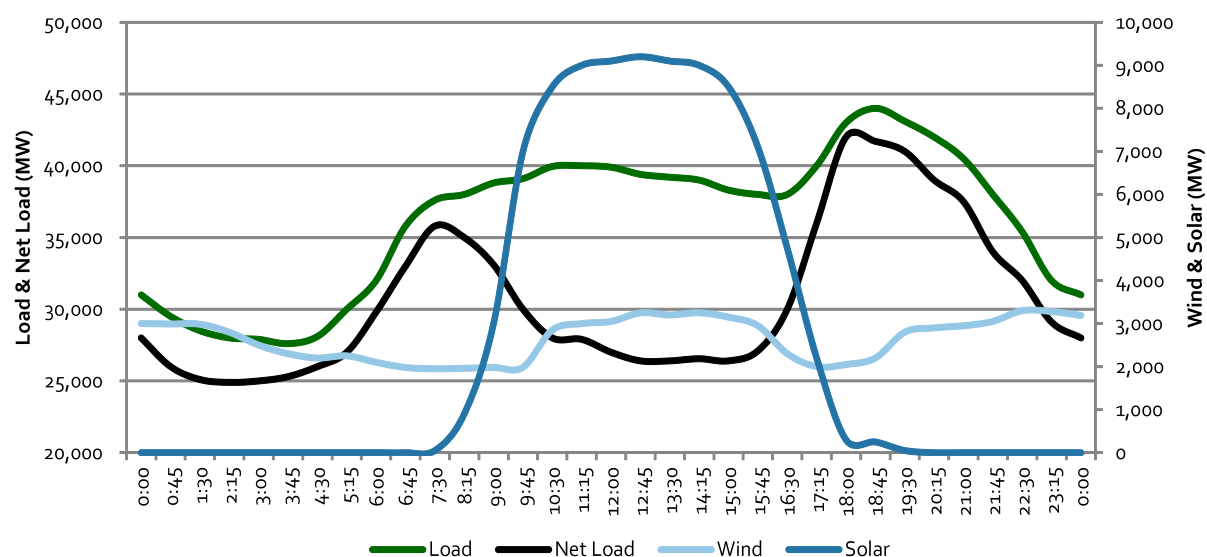
- ▼ Affordable natural gas has given rise to new gas/ electric coordination issues
- ▼ Policy-supported renewables have already changed the U.S. power portfolio
- ▼ Aggressive state policies favor decentralized/ distributed generation (especially solar)
- ▼ Long-standing energy efficiency programs continue
- ▼ Environmental activists oppose a wide variety of energy infrastructure (attacking the “doors” by which energy moves to end users)

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CAMELS, ELEPHANTS AND DUCKS!



CAISO Projects Disparate Shapes of Renewable Dispatch and Power Demand in 2020



Note: The Elephant Camel and Duck references correspond to the general shape of the load (elephant), solar (camel) and net load (duck) curves over the course of a day

Source: ClearView Energy Partners, LLC, California Independent System Operator

CEQ'S RE-PROPOSED GHG GUIDANCE



- ▼ Would modify environmental reviews under the *National Environmental Policy Act* (NEPA)
 - Proposes a minimum threshold for quantitative analysis of GHG emissions (25,000 Mt/Y CO₂e)
 - Recommends programmatic environmental impact statements (EIS) where appropriate
 - Monetary cost-benefit analyses encouraged (not required), as is use of federal social cost of carbon
 - Offsets may be contemplated as mitigation
 - Qualitative analysis needed when quantification is impractical
 - Agencies retain “substantial discretion”
 - Should be applied to “on-going” reviews

REPRESENTATIVE COMMENTS OPPOSING



- ▼ Inconsistent with NEPA itself, Executive Order 13604, and Supreme Court precedent
- ▼ Risks “Analysis paralysis”
- ▼ Reviews risk being expensive and too broad to be in scope to useful in decision making (scope)
- ▼ Extended reviews could frustrate *Clean Power Plan* compliance plans by slowing natural gas pipelines
- ▼ Programmatic reviews for transmission lines are unnecessary because of the vetting that precedes their selection in regional processes

SOME COMMENTS SEEK *MORE* REVIEW

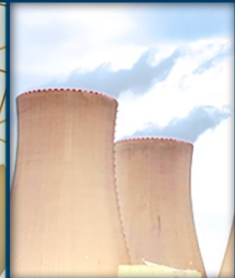


- ▼ All projects should have GHG emissions quantified and analyzed, not just those >25,000 Mt/Y CO₂e
- ▼ The alternative with the fewest GHG emissions should be selected (even if that is the “no action” alternative)
- ▼ Alternatives should also be evaluated for potential GHG impact
- ▼ Cost-benefit analysis should consider even higher social cost of carbon estimates, and use multipliers for methane emissions

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QUESTIONS?

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