



# A Postcard from America

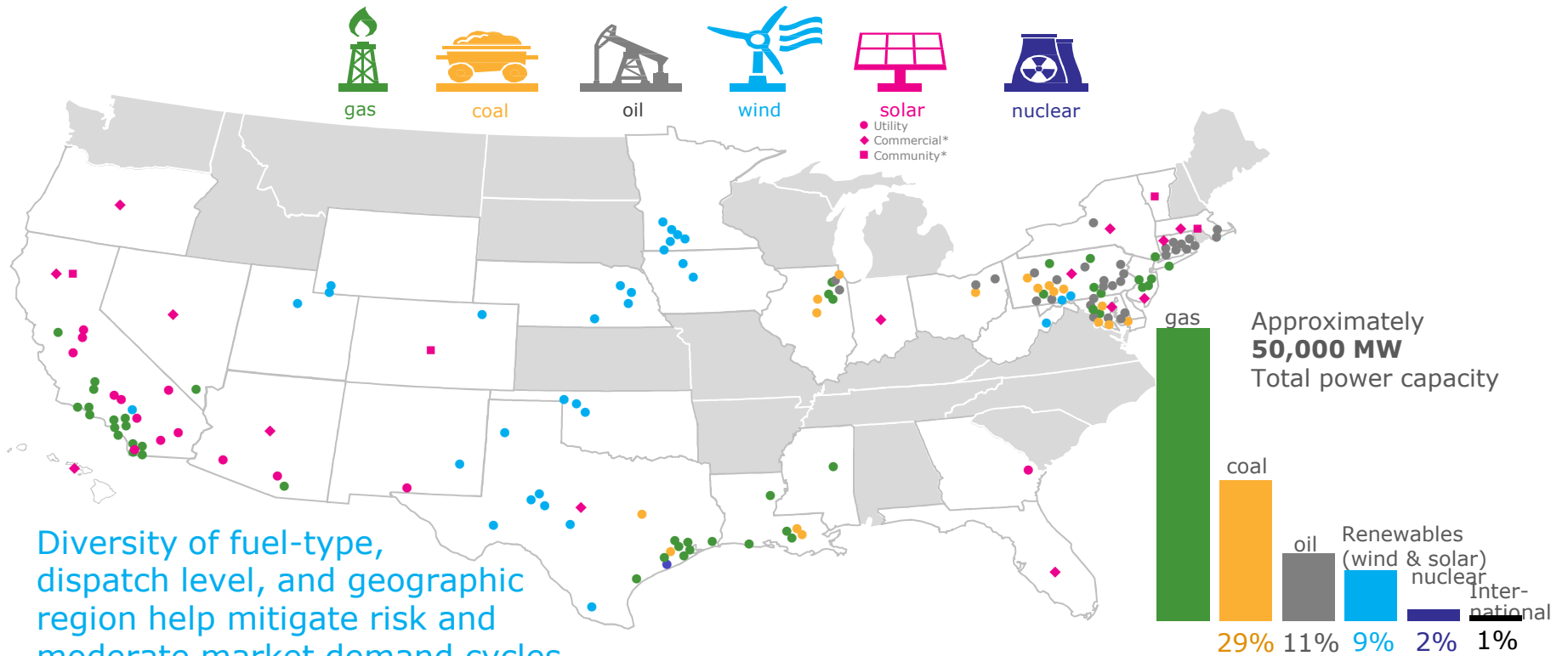
*Markets for a Low-Carbon Future*

Pete Fuller  
June 12, 2017





# One of the U.S.'s Largest and Most Diverse Generation Portfolios



Diversity of fuel-type, dispatch level, and geographic region help mitigate risk and moderate market demand cycles

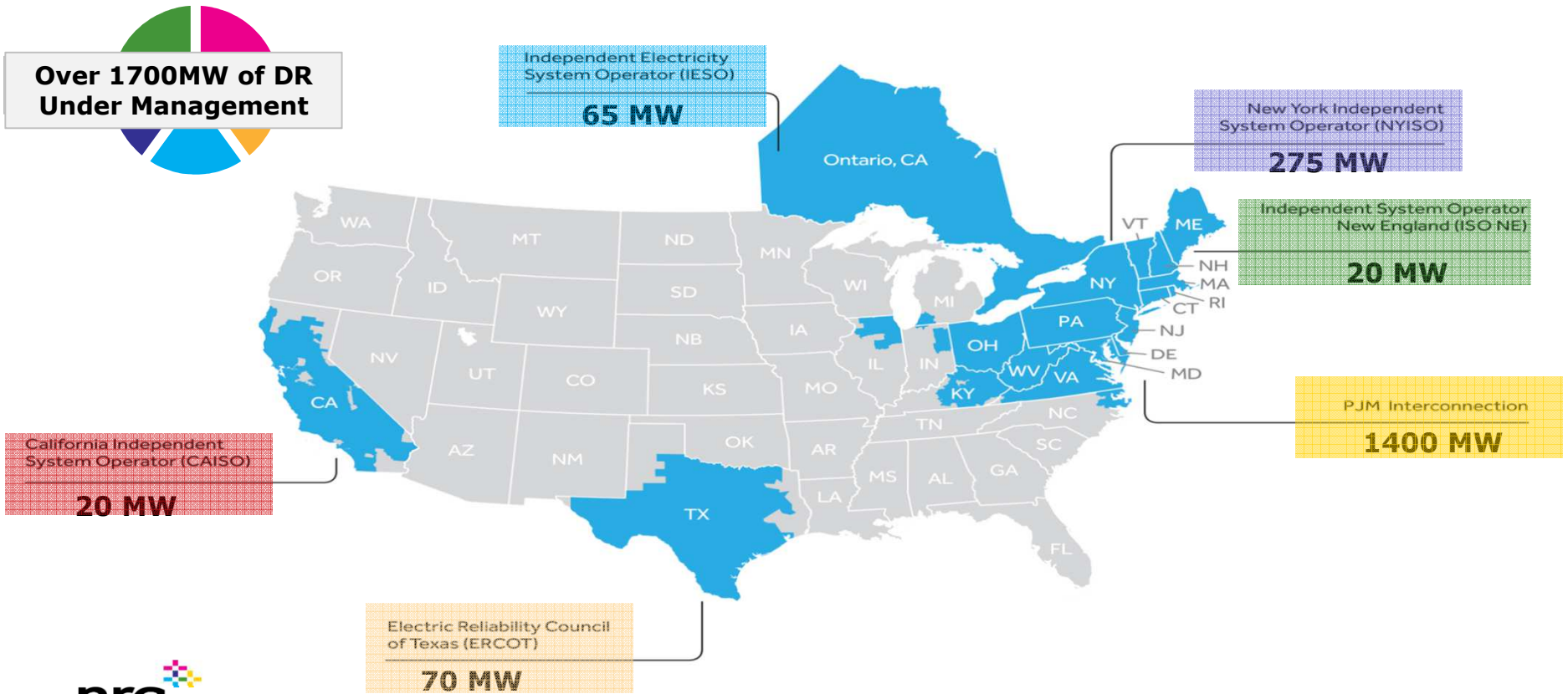


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NRG and NRG Yield Assets excluding 1,346 MW thermal. As of 2Q16.  
Net dependable capacity ratings based on NRG ownership.  
\*Commercial and community points represent multiple sites throughout the state (except OR and FL).



# NRG's Demand Resource Footprint



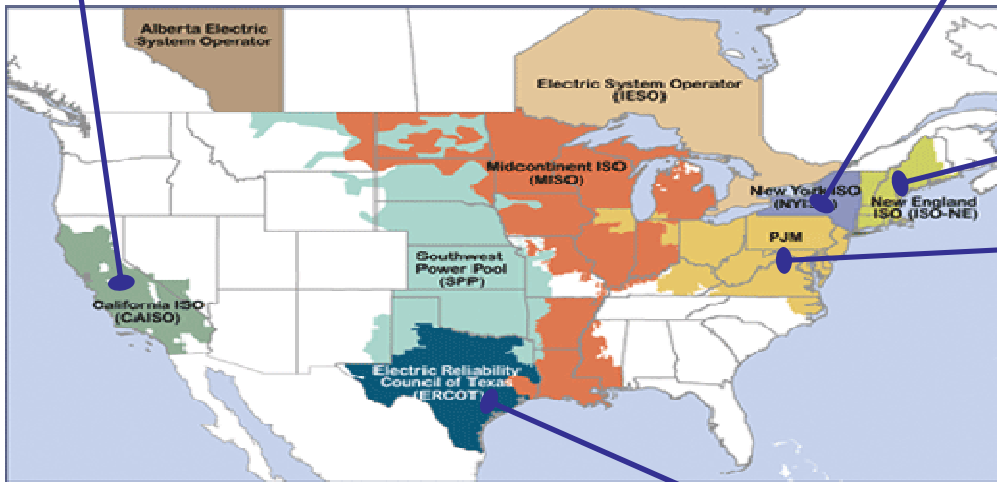


## Current State of Play in U.S. Markets – Addressing State Policy Actions

- ✓ Aggressive renewable energy targets and achievements → 'duck curve'
- ✓ Bilateral structure for adequacy
- ✓ State mandates for 'preferred resources'

- ✓ Reforming the Energy Vision
- ✓ 50% renewables by 2030 through state contracts
- ✓ ZECs for upstate nuclear units

- ✓ Massive state-mandated purchases of renewables
- ✓ Aggressive RPS and net-metering policies
- ✓ **Active stakeholder discussions**



- ✓ State actions (IL, OH, PA, NJ) to retain uneconomic coal and nuclear plants
- ✓ **Nascent stakeholder discussions**

- FERC:
- ✓ **Technical Conference on nexus of state policies and markets**
- ✓ **Proceeding on storage and DER aggregation and market participation**

- ✓ Large presence of wind and low-priced gas, plus market design challenges for energy-only market
- ✓ **ERCOT proceeding to evaluate Dr. Hogan's recent catalogue of market implementation deficiencies**





Thoughts for Ontario





## Ontario's Challenge is Two-Fold

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- ✓ Pioneer the market design for low carbon systems
  - ✓ Address operational and investment challenges in a low-carbon, low-marginal cost system
  - ✓ Explicit definition of 'clean' energy requirements
  - ✓ Transparent valuation of flexibility and responsiveness to balance supply and demand (including demand, storage, etc)
- ✓ Establish fully-formed markets to maximize operational efficiency and sustainability of investment
  - ✓ Independence of markets – limit risk of government intervention
  - ✓ Suite of market structures – full LMP with scarcity pricing; ancillary services; performance-based capacity; explicit 'clean energy' requirement
  - ✓ Market valuation of existing generation, DR and contracts

Ontario's existing low-carbon system means these two challenges likely must be tackled simultaneously



## Summary

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- ✓ Competitive electricity markets – though imperfect – work.
  - ✓ U.S. RTOs report billions of dollars in savings
  - ✓ Market-based investment continues, at low prices
  - ✓ Consumers are shielded from investment and performance risk
  - ✓ Where implemented fully, retail choice leads to innovation and value
  
- ✓ Ontario should strive for a sustainable market structure
  - ✓ Leverage the power of customer and third-party innovation and investment
  - ✓ Rely on economic incentives to drive reliability and efficient outcomes
  - ✓ Ensure all technologies, fuels, etc. can compete based on their technical capabilities
  - ✓ All markets (capacity, energy, etc) must include **all** relevant constraints – e.g., reliability, security, clean energy, location
  - ✓ U.S. markets provide good lessons of what works (and what doesn't)



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**Thank you.**

[peter.fuller@nrg.com](mailto:peter.fuller@nrg.com)

