

# Grid Interactive Water Heaters

*Filling the Policy Gap:  
A Role for Legislation?*

**ACEEE Hot Water Forum**

**Portland, OR**

***February 27, 2017***

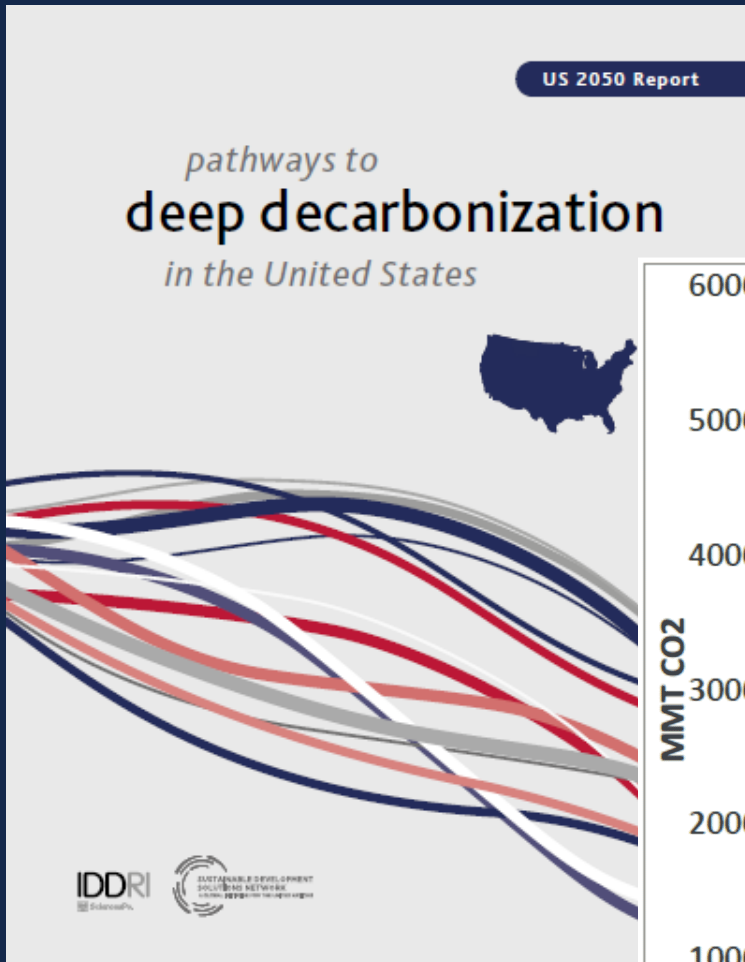
Robin Roy, Ph.D.

Next Energy

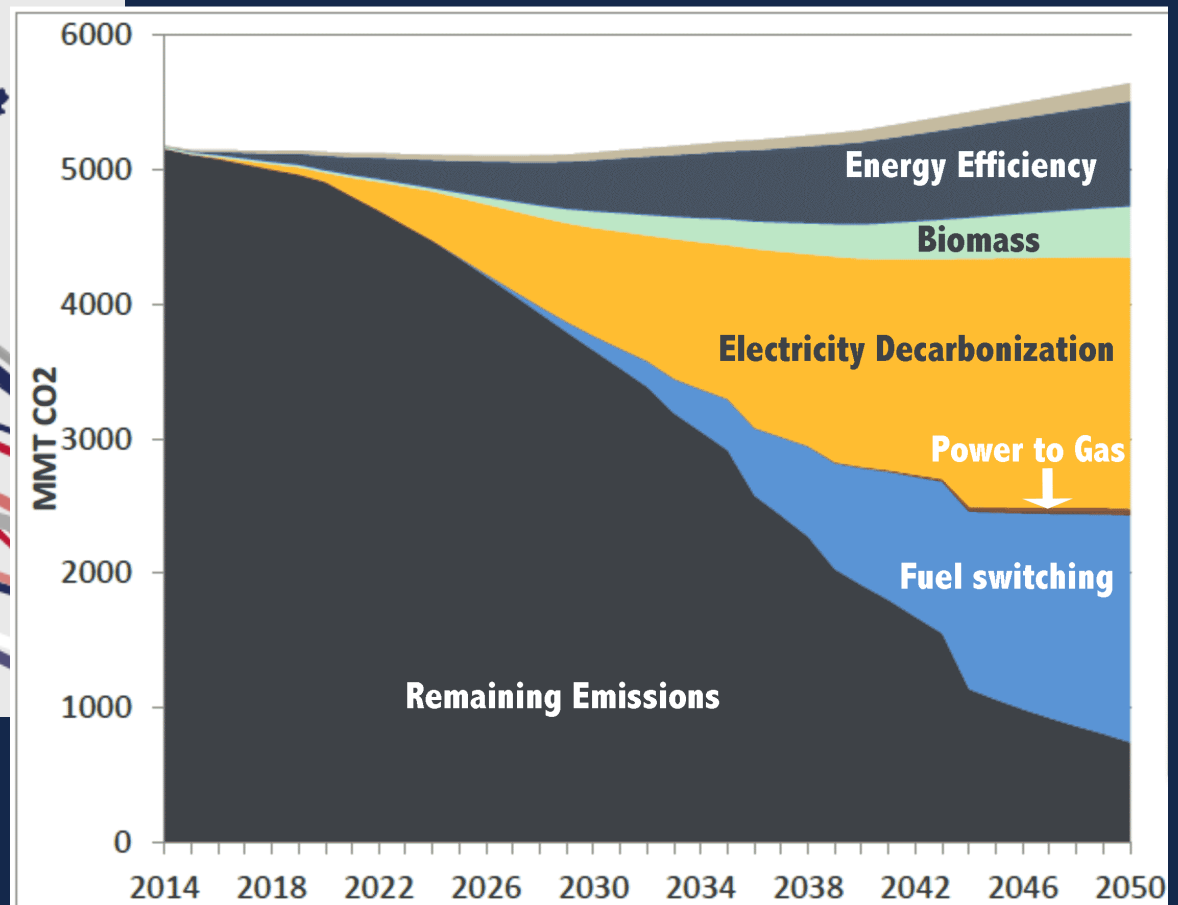
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Consultant to Natural Resources Defense Council

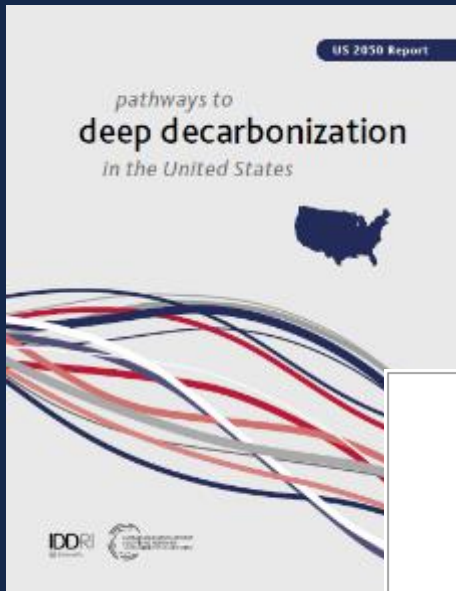
# Key Driver: Deep Decarbonization



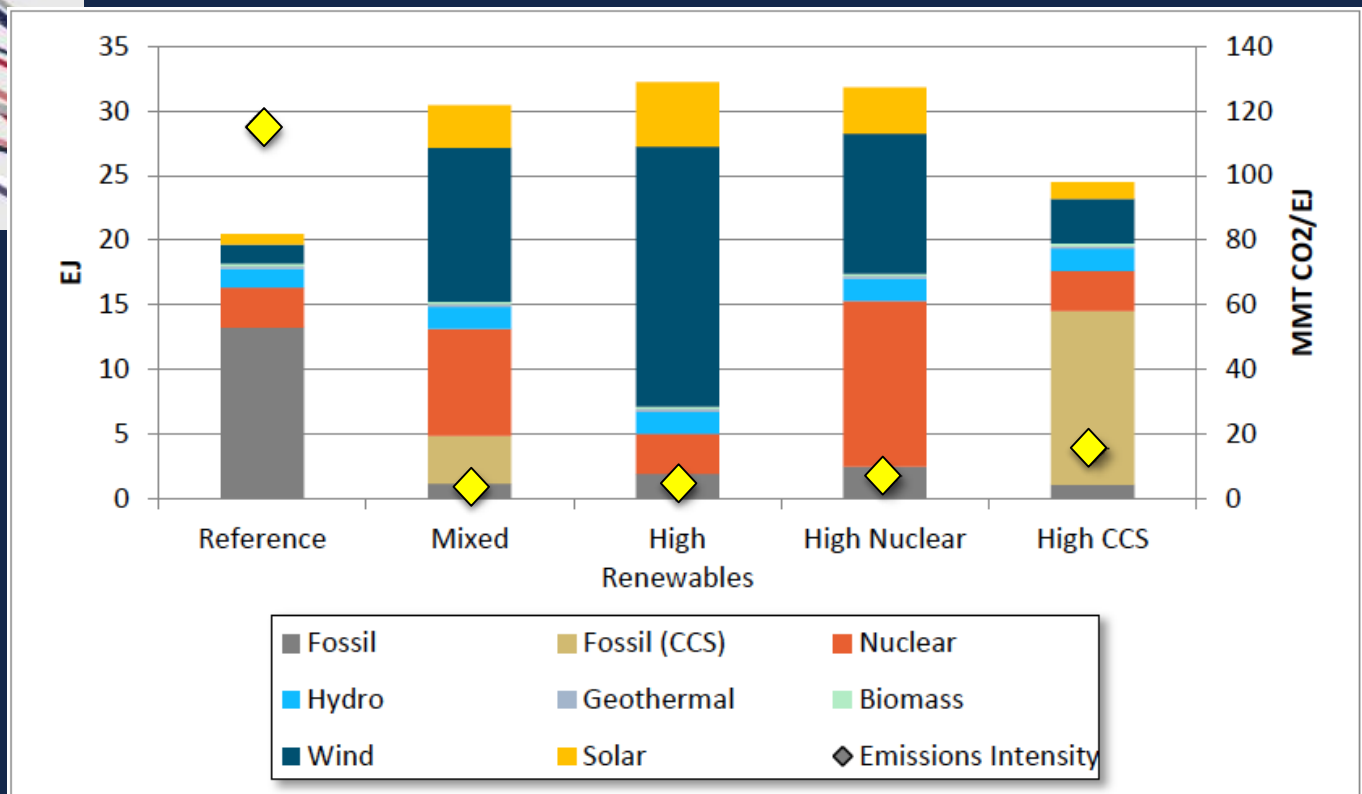
- Technically & economically **feasible**
- Must look to **all options**



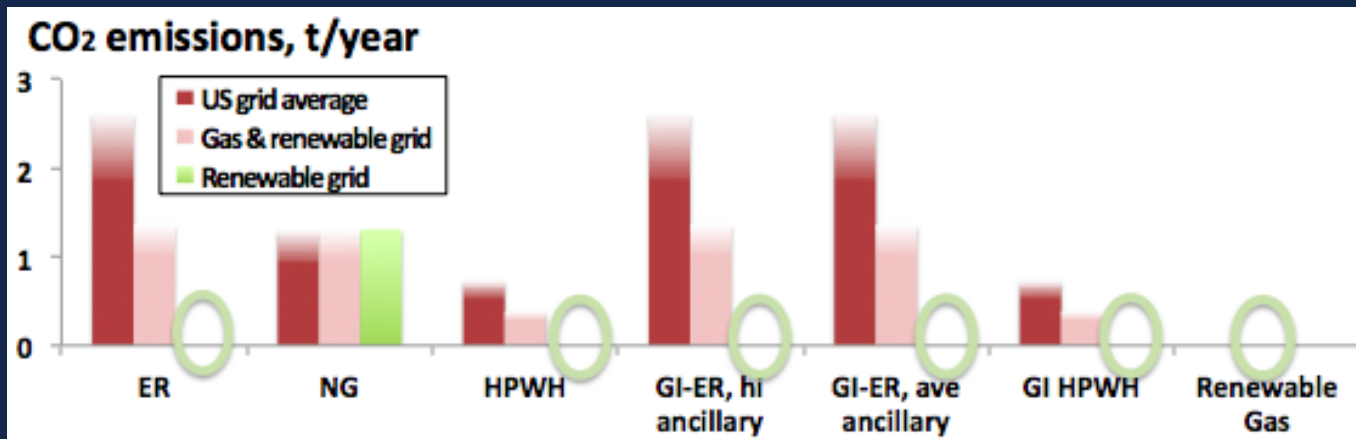
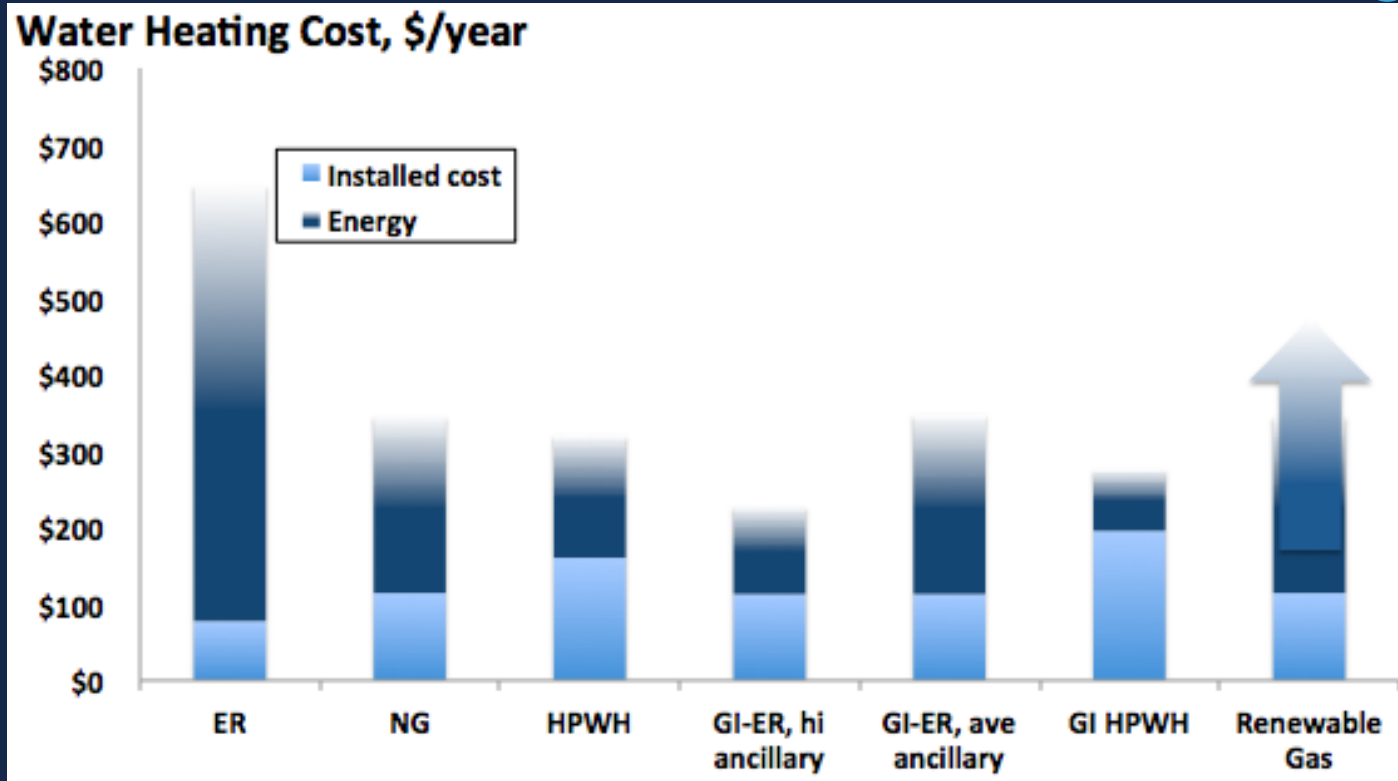
# Multiple Electricity Decarbonization Pathways



- Challenging, but several options
- Very large capital investment  
...but small net consumer impact
- All involve **much less flexible generation**



# Cost and Emissions of Water Heating



# Recent Legislation

- **Public Law 114–11** Energy Efficiency Improvement Act of 2015
  - Sec. 201 **Grid Enabled Water Heaters**
- **Public Law 114–113** Consolidated Appropriations Act 2016

# Federal Policy Impacting GI-WH

- DOE appliance & equipment **minimum energy standards** **Big Gap**
- DOE **R&D** support for
  - **Grid interactive electric resistance technology** **Big Gap**
  - **Analysis** of cost and performance (i.e., emissions, amenity)
- DOE development of model **building energy codes** **Big Gap**
- FERC oversight of **wholesale electricity market design** **Narrowing**
  - FERC storage NOPR
- EPA development of **ENERGY STAR** specifications **Big Gap**
  - EPA **connected equipment** specifications?
- Federal **tax incentives** **Big Gap**
  - **ITC**
  - **24D & 25C**

# Recently Proposed Legislation *(2015-16)*

- S.2012 (Senate) **Energy Policy Modernization Act**
- S.2012 (House) **North American Energy Security & Appropriations**
- S.1232 **Smart Grid Act** of 2015
- S.3159 **Energy Storage Tax Incentive & Deployment Act** of 2016

# S.2012 Energy Policy Modernization Act

- **Died in Conference** Dec 2016
- **Senate Version: Energy Policy Modernization Act**
  - Title II Subtitle D: **Electricity and Energy Storage**
    - Sec 2301. **Grid Storage Program**
    - Sec 2302. Elec Sys **Grid Architecture, Scenario Devel, Modeling**
    - Sec 2304. **Voluntary Model Pathways**
    - Sec 2305. **Performance metrics** for electricity infrastructure providers
    - Sec 2306. State & Regional Elec **Distribution planning**
    - Sec 2307. **Authorization** of Appropriations
    - Sec 2308. Electric **Transmission Infrastructure** Permitting
    - Sec. 2309. **Report by Transmission Organizations** on DER
  - Sec 4402. **Quadrennial Energy Review**
- **House Version:**
  - Sec 1206. Closed Loop **Pumped Storage** Projects
  - Sec 3114. **Battery Storage Report**



# S.1232 Smart Grid Act of 2015

- Sec. 2. Smart Grid **Interoperability Working Group**
- Sec. 3. Smart Grid **Technology RD&D** program policy
  - **Transactive Energy** Projects
  - Innovation in **Valuation** of New Technology Grid Services and Efficiency
  - **Rate Design-Distribution System**
  - Rate Design – **Consumer Acceptance** of Time-based Pricing
  - **Energy Storage**
  - Smart **Electric Vehicle Charging**
  - **Demonstration Projects**

# S.3159 Energy Storage Tax Incentive...Act of 2016

- Sec. 2. Energy **ITC for Energy Storage** Technologies
- Sec. 3. Res'l Energy Efficient Property **25D Credit for Battery Storage**  
Technology

# Federal Policy Impacting Community Storage

- DOE appliance & equipment **minimum energy standards** **Big Gap**
- DOE **R&D** support for
  - **Connected equipment & transactive technology** **Big Gap**
  - **Valuation** of connected equipment operation & retail electric **rate design**
- DOE development of model **building energy codes**
- FERC oversight of **wholesale electricity market design** **Gap**
  - **FERC storage inquiry**
- EPA development of **ENERGY STAR** specifications **Big Gap**
  - EPA **connected equipment** specifications
  - Specifications for non-connected equipment
- Federal **tax incentives** **Big Gap**
  - **ITC**
  - **24D & 25C**

# Next Steps

- **Assess/develop programs**
- **Define and assess policy gaps**
- Explore **regulatory and legislative options**
  - Authorization, appropriations, report language, marker bill
  - Regulatory interpretation
- **Collaborate**
  - Across the supply chain, and across the policy and political spectrum
  - Join the Community Storage Initiative

Contact

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