

A vertical photograph of a wind turbine on the left side of the slide, showing its blades and tower against a clear sky.

# MODELS MATTER, DAMNIT

*PREPARED FOR THE  
ENERGY SYSTEMS  
INTEGRATION GROUP*

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MAY 14, 2019

@oboylemm

ENERGY INNOVATION  
POLICY & TECHNOLOGY LLC

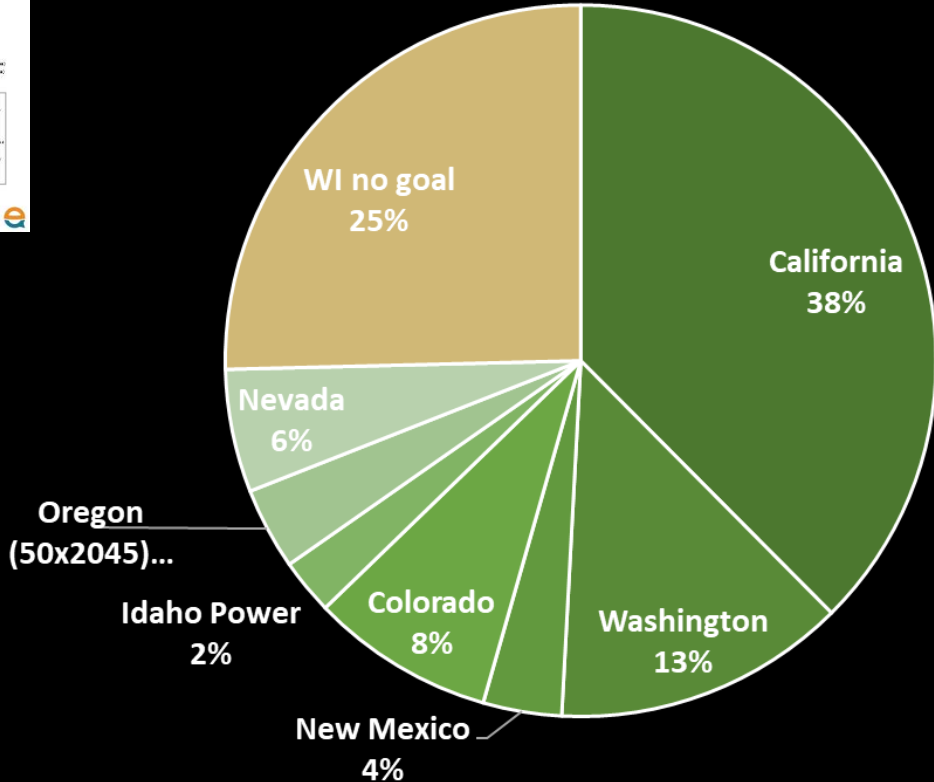
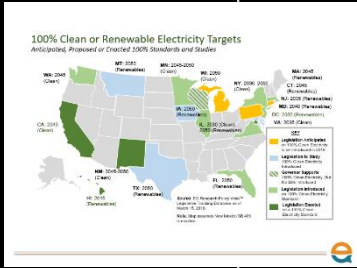
A logo for Energy Innovation Policy & Technology LLC, featuring a stylized sunburst or starburst design to the right of the company name.

# OUTLINE

1. Taking stock of renewables policy in the U.S.
2. The need for action
3. Questions we need answered

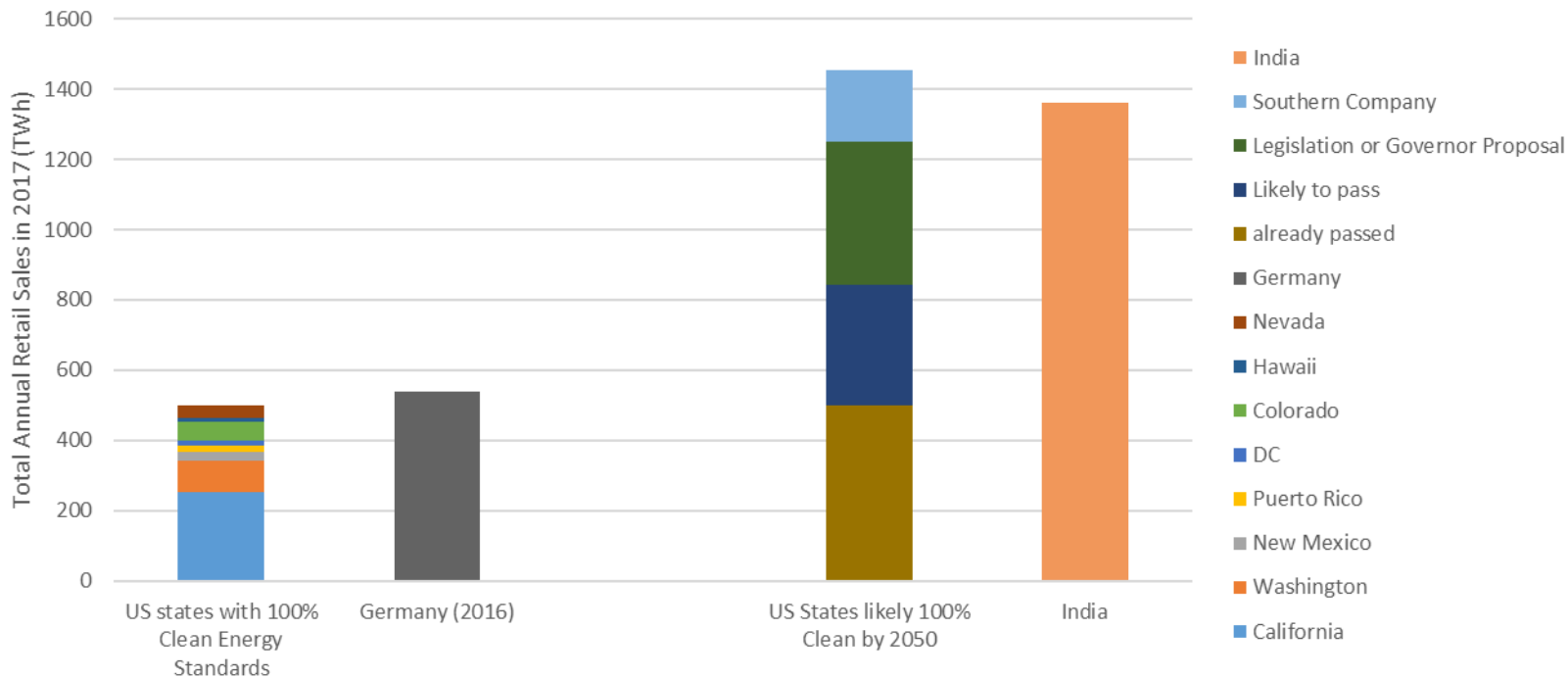


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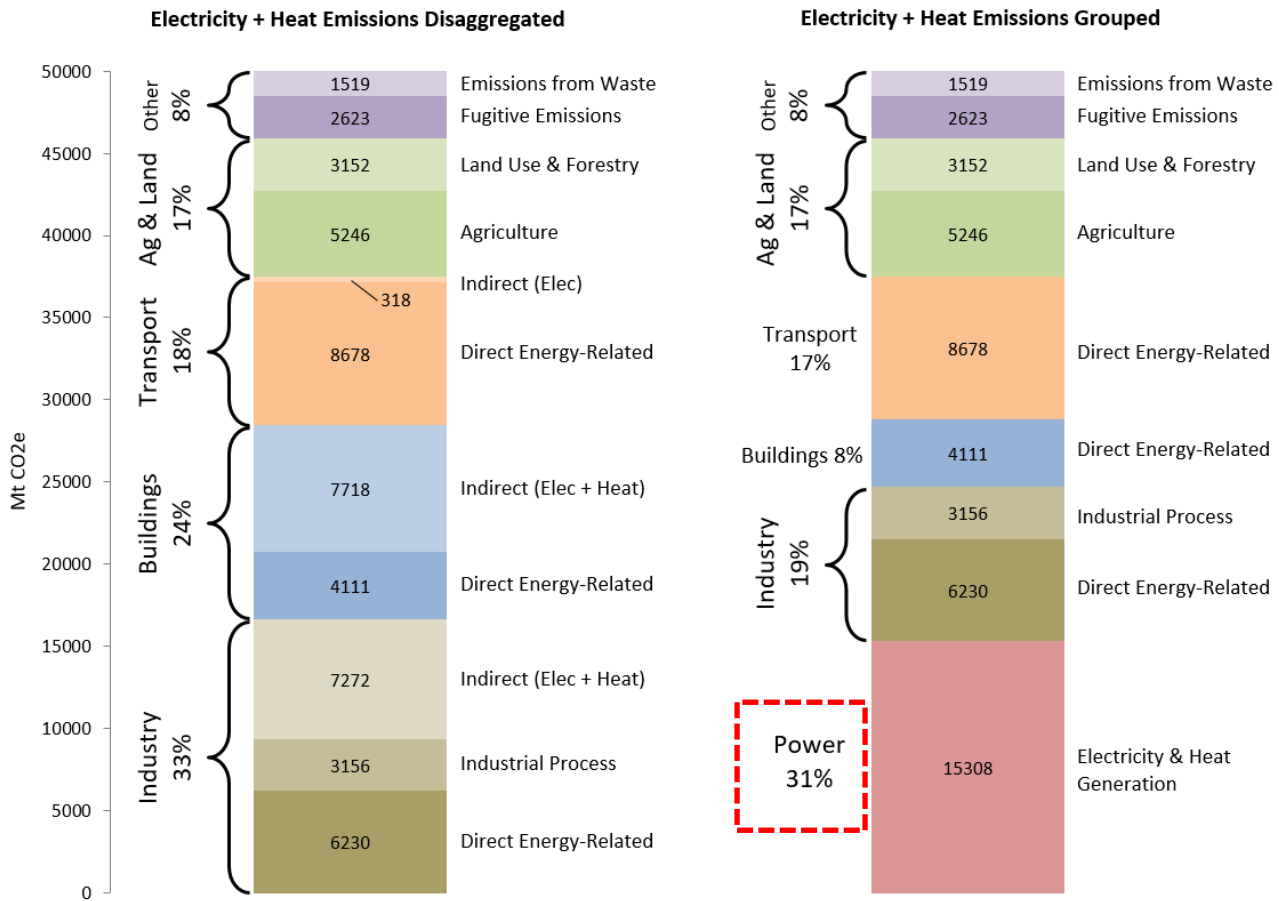
# RENEWABLE ENERGY IS RACING FORWARD

Sizing up 100% Clean Energy Standards & Utility Goals in the U.S.

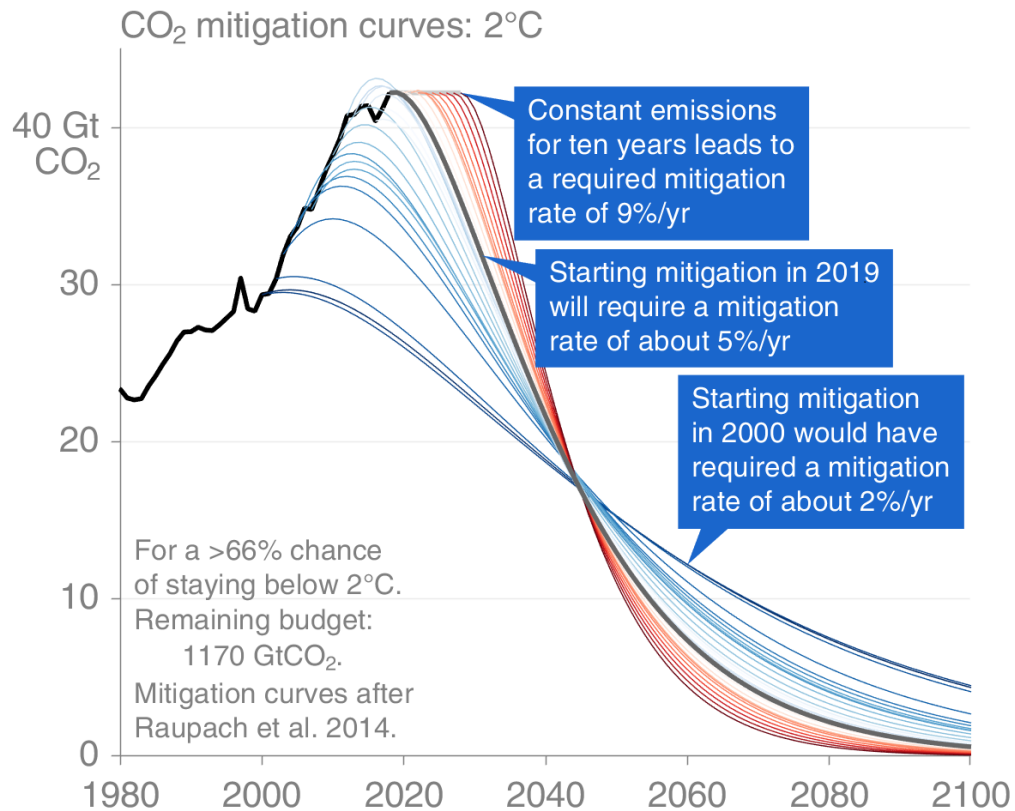


BUT 100%  
CLEAN  
ELECTRICITY  
IS NOT  
ENOUGH.

## GLOBAL GHG EMISSIONS BY SECTOR IN 2014



# WE CANNOT REST ON OUR LAURELS



# POLICY MOMENTUM IS OUTPACING THE MODELING



100% Clean Electricity by 2035



Net-Zero Emissions by 2050

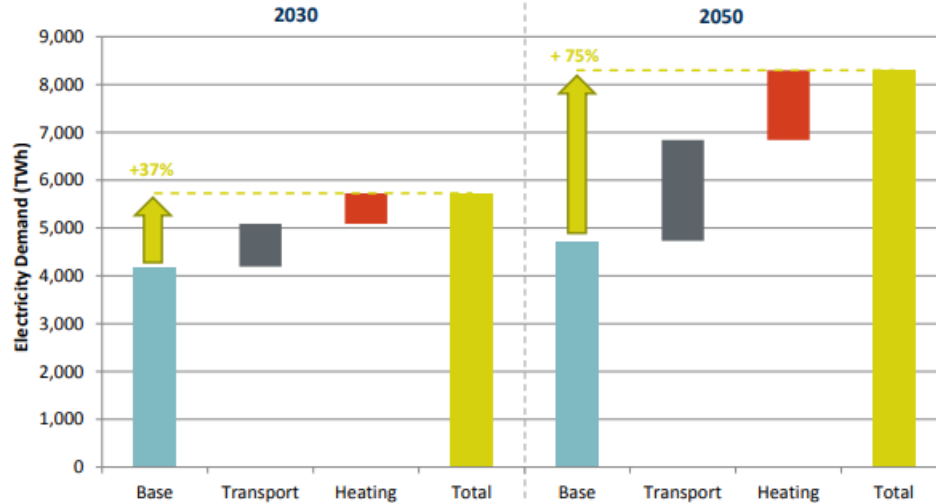
# POLICYMAKERS NEED YOUR COVER



# WHERE POLICYMAKERS ARE FLYING BLIND

FIGURE 6

Incremental Electricity Sales due to Electrification of Heating and Transport



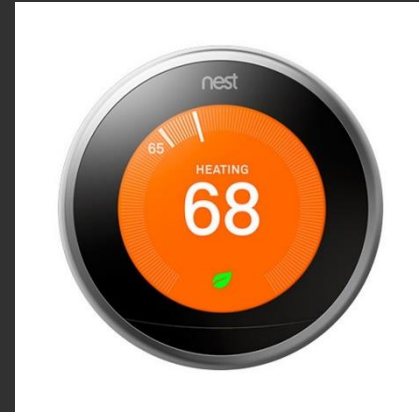
Source: AEO 2015, NREL 2016, The Brattle Group analysis

## ELECTRIFICATION

- Renewables integration
- Infrastructure needs
- Demand-side participation, flexibility, elasticity
- Industrial electrification
- Synthetic fuel production

# WHERE POLICYMAKERS ARE FLYING BLIND

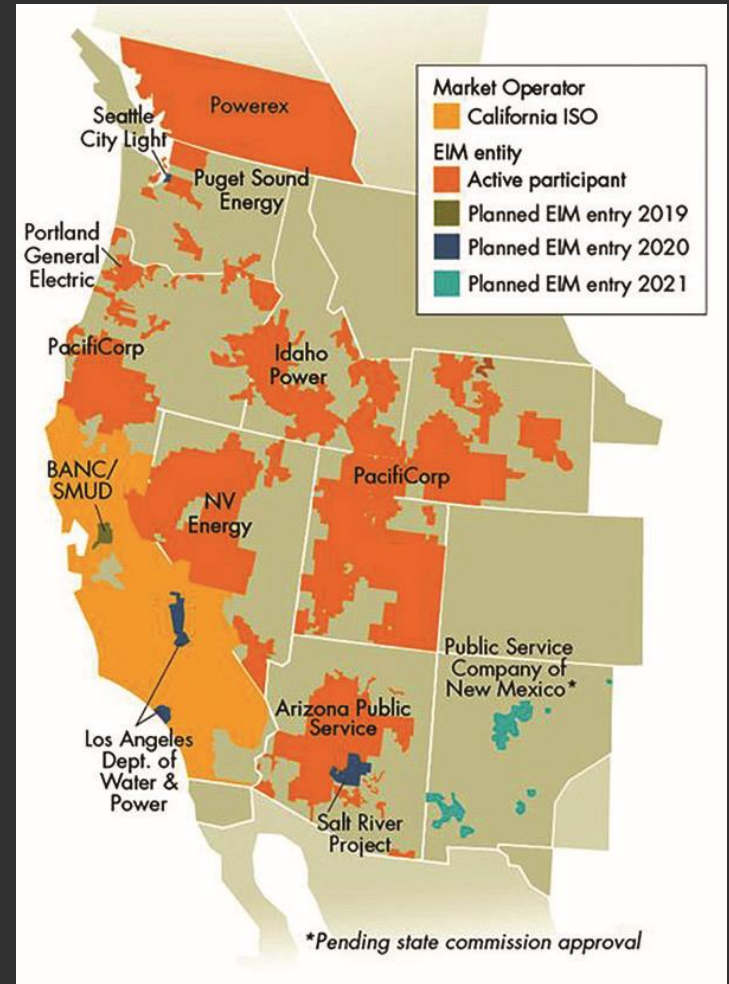
Uncertainties around the roles of **disruptive technologies**



# WHERE POLICYMAKERS ARE FLYING BLIND

Modeling institutional reforms  
policymakers are considering

- Market design
- Utility reforms



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# THANK YOU

# WHAT WE UNDERSTAND WELL

- 80-90% renewable and coal-free can be done affordably and reliably
- Transmission enables high penetrations of RE at lower cost
- Inverter-based resources provide many reliability services better than conventional resources
- Demand-side resources are key
- We can innovate our way through uncertainty related to 100% clean...