

Role of Renewable Energy in Electrification and Decarbonization

Prepared By:

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Prepared For:

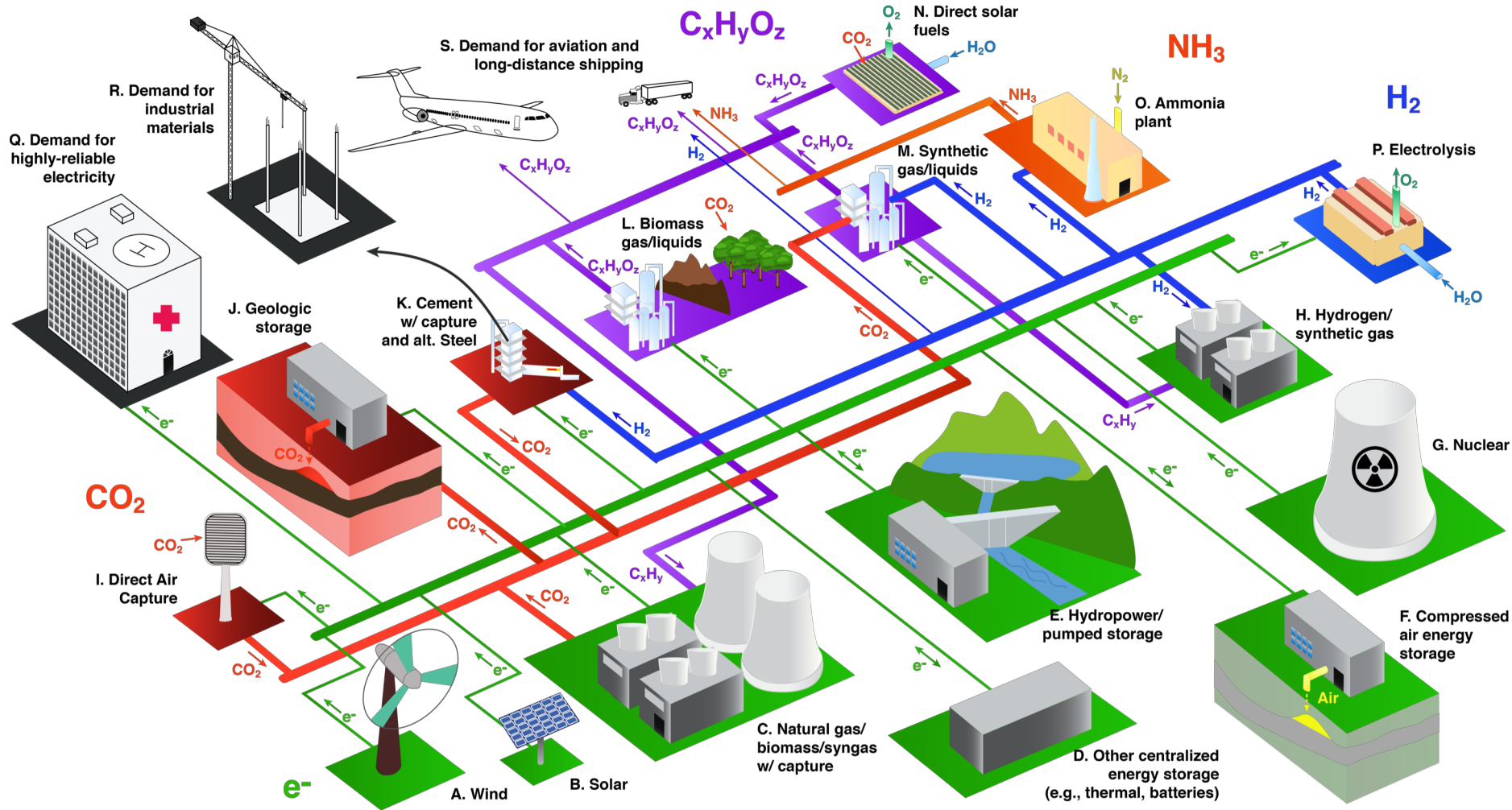
ESIG Spring Technical Workshop 2019

March 21st, 2019

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The Whole Economy Needs Energy



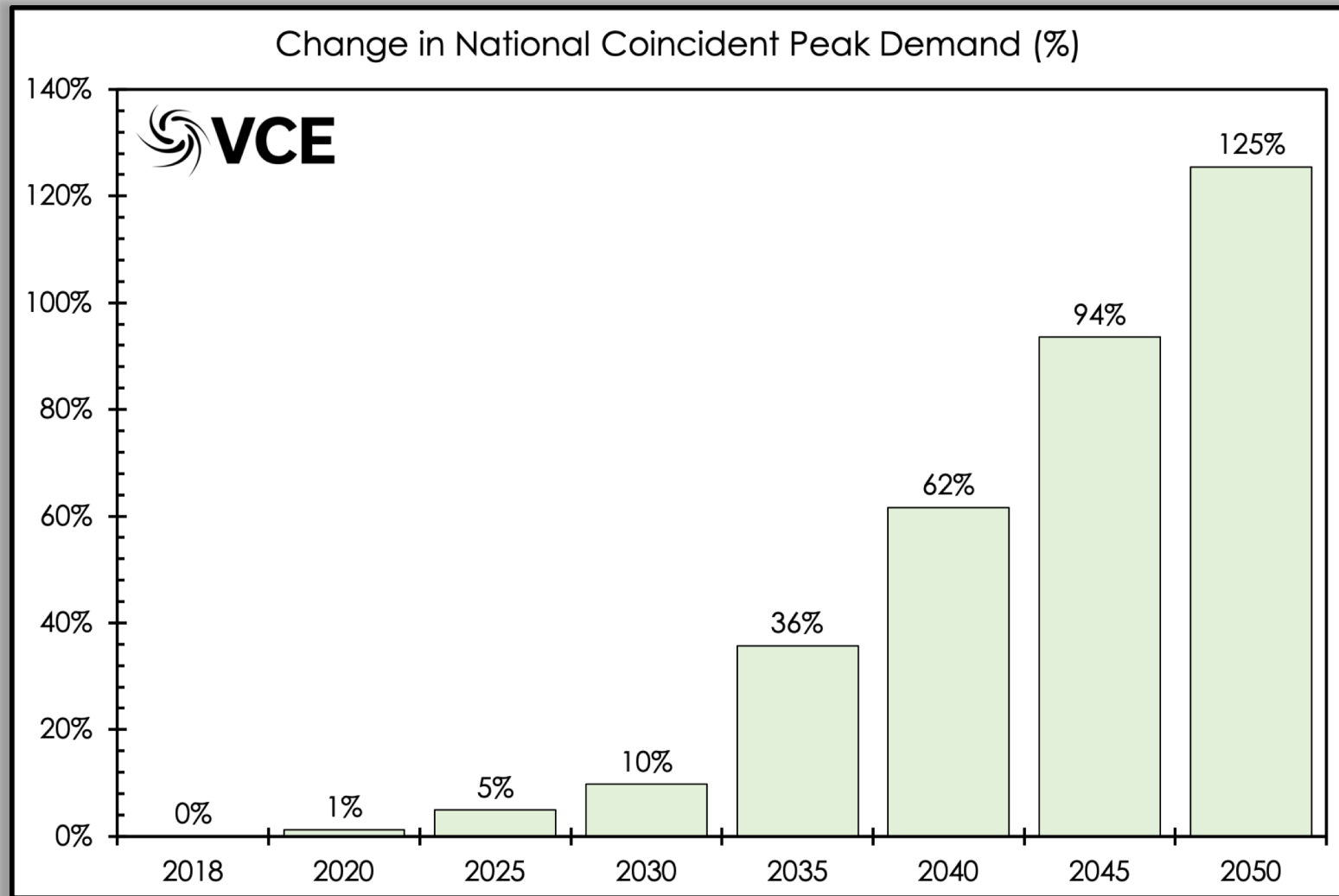
Davis et al. *Science*, 2018

Electrification that WIS:dom® Considers

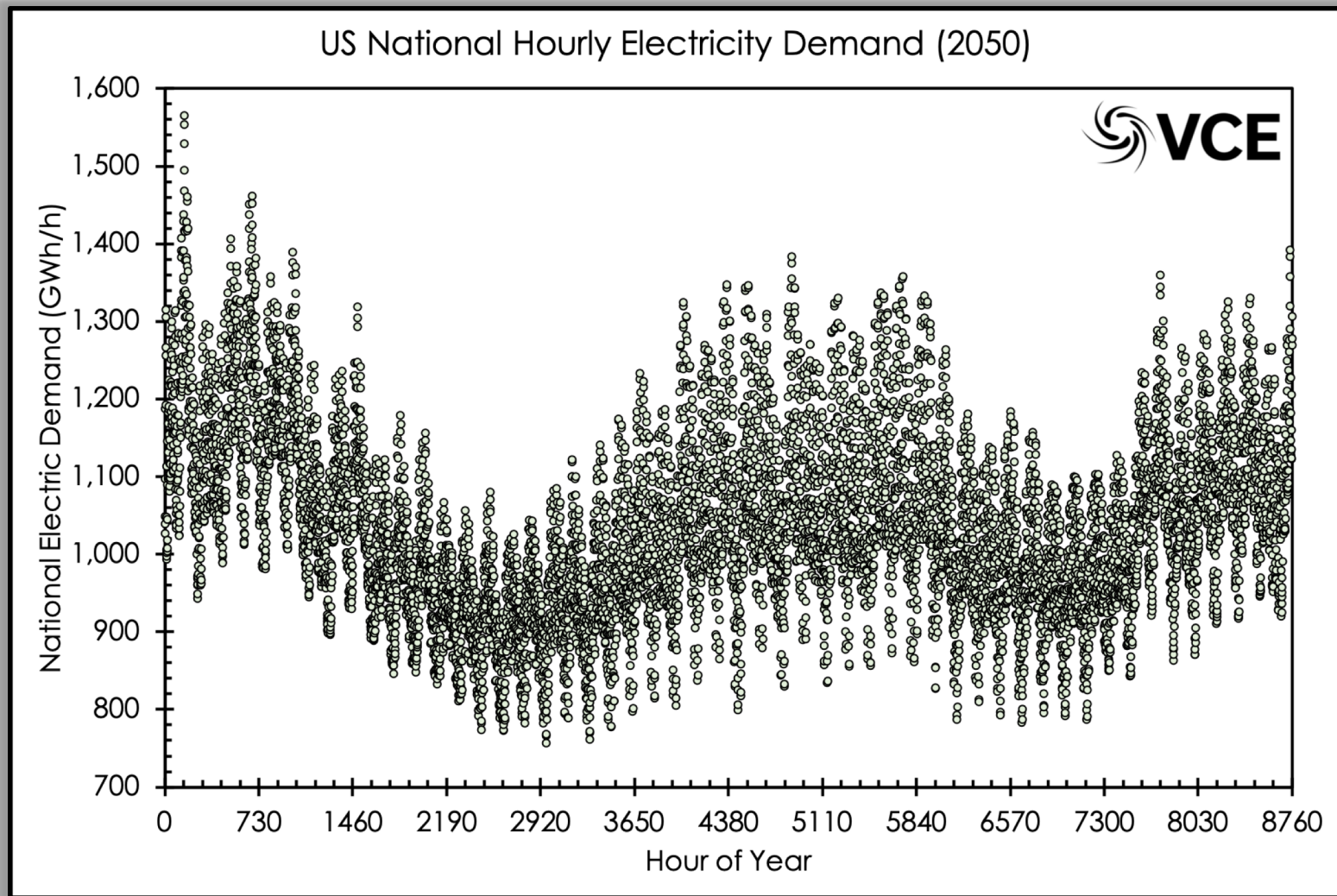
The WIS:dom® optimization model considers **electrification through:**

1. Light Duty Vehicles,
2. Heat pump Water Heaters (residential & commercial),
3. Heat pump space heating (residential & commercial),
4. Light Duty Trucks,
5. H2 production for:
 - *Medium / Heavy Duty Trucking,*
 - *Industrial Demands,*
 - *Space heating (residential and commercial),*
 - *Other transportation (Sabitier to Fischer-Tropsch Processes).*

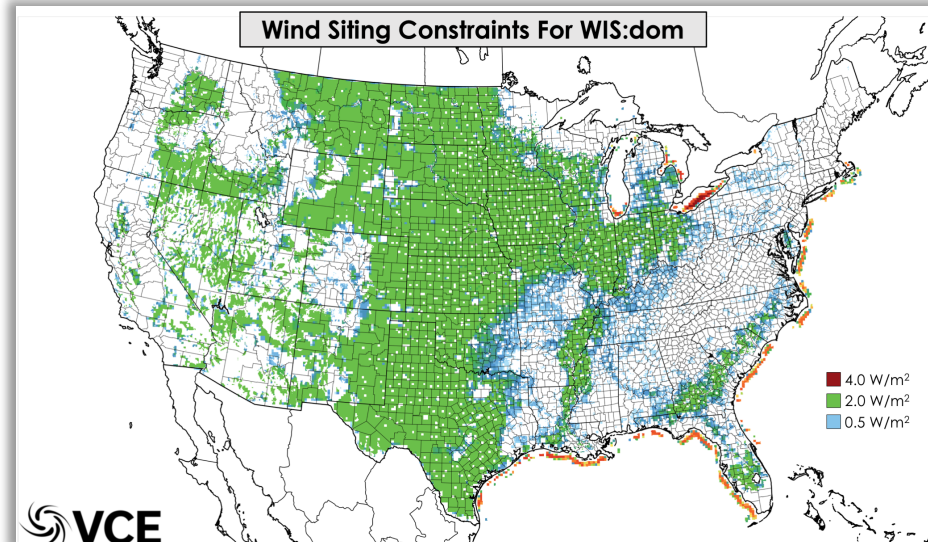
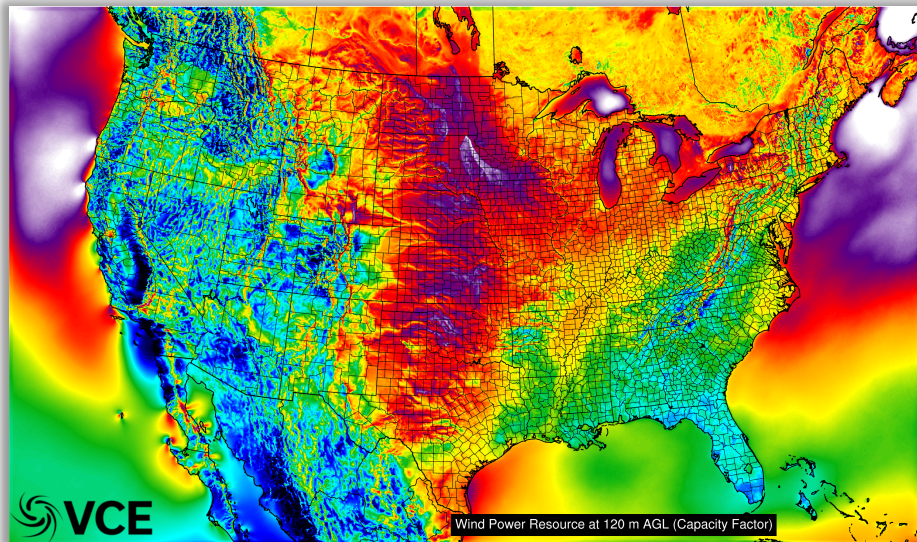
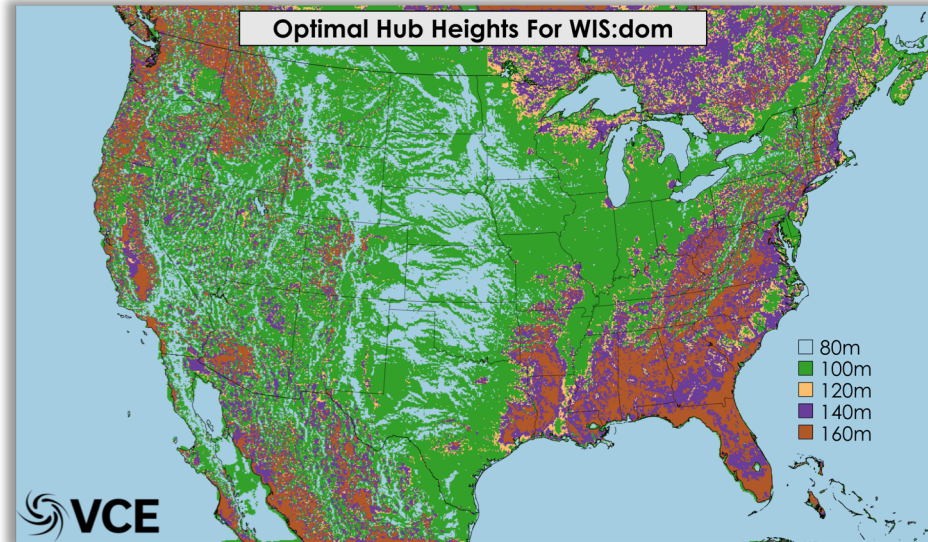
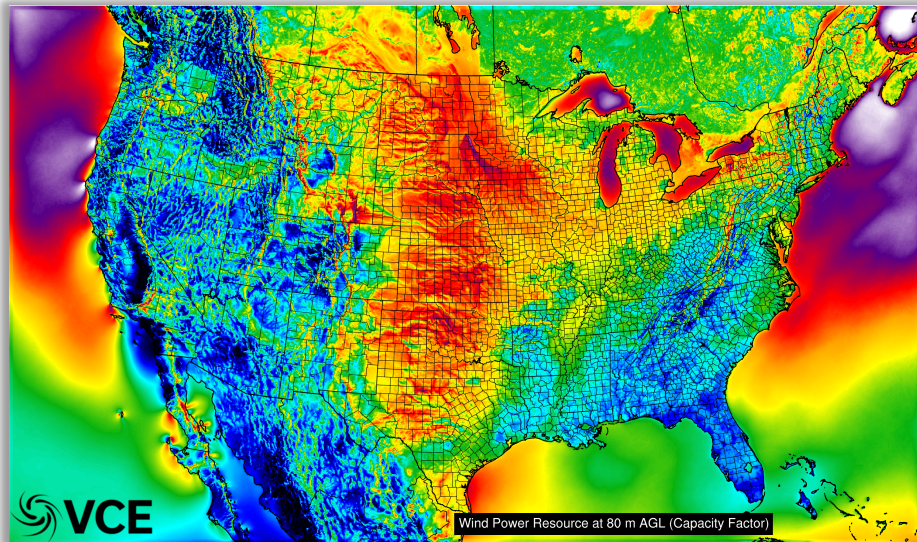
Electrification Changes Electricity Needs



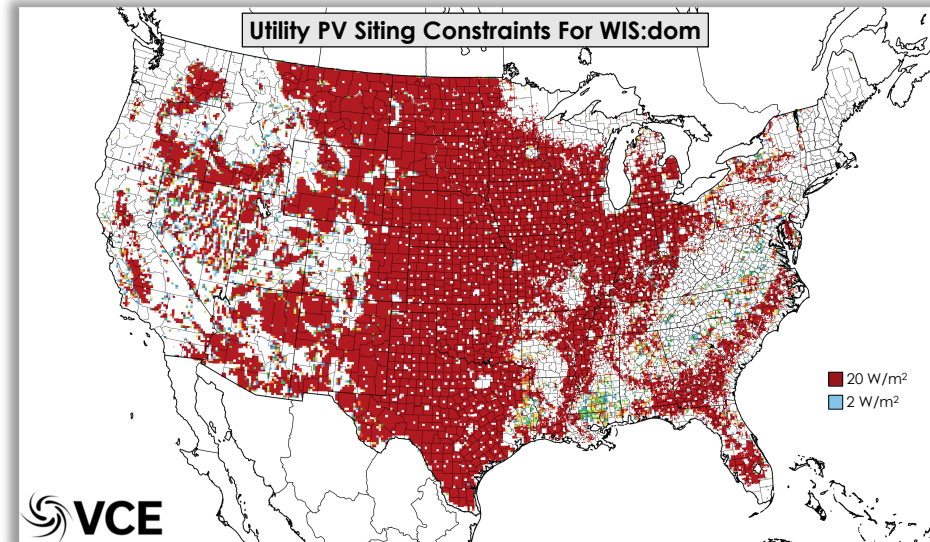
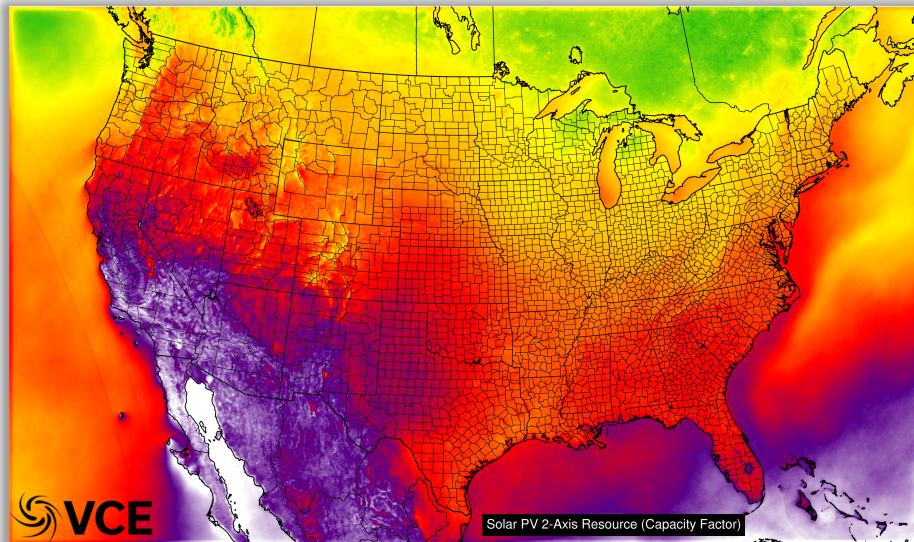
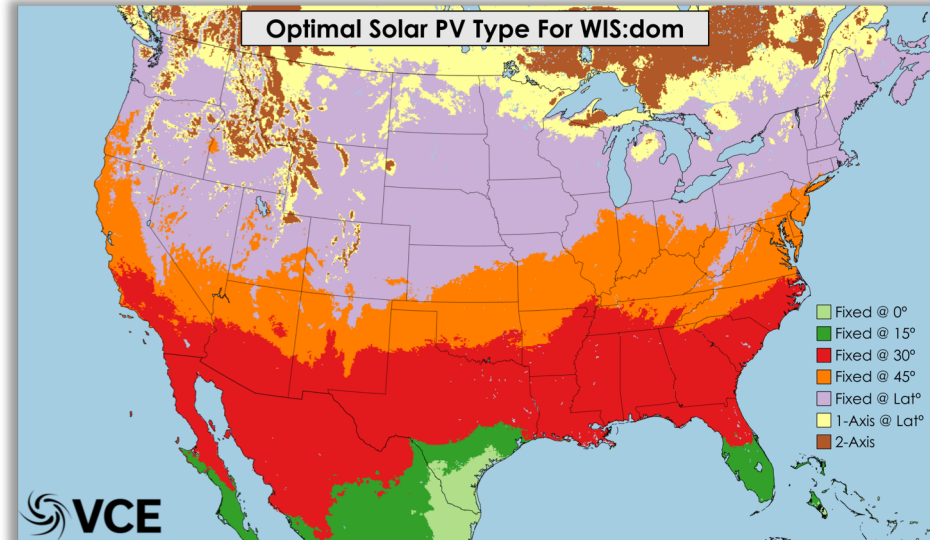
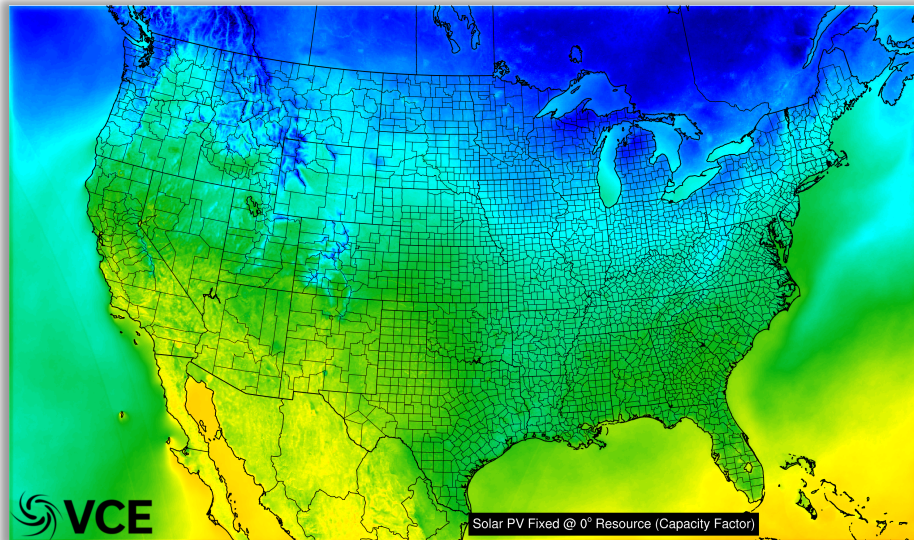
Electrification Changes Electricity Needs



WIS:dom® Contains Detailed Wind Datasets

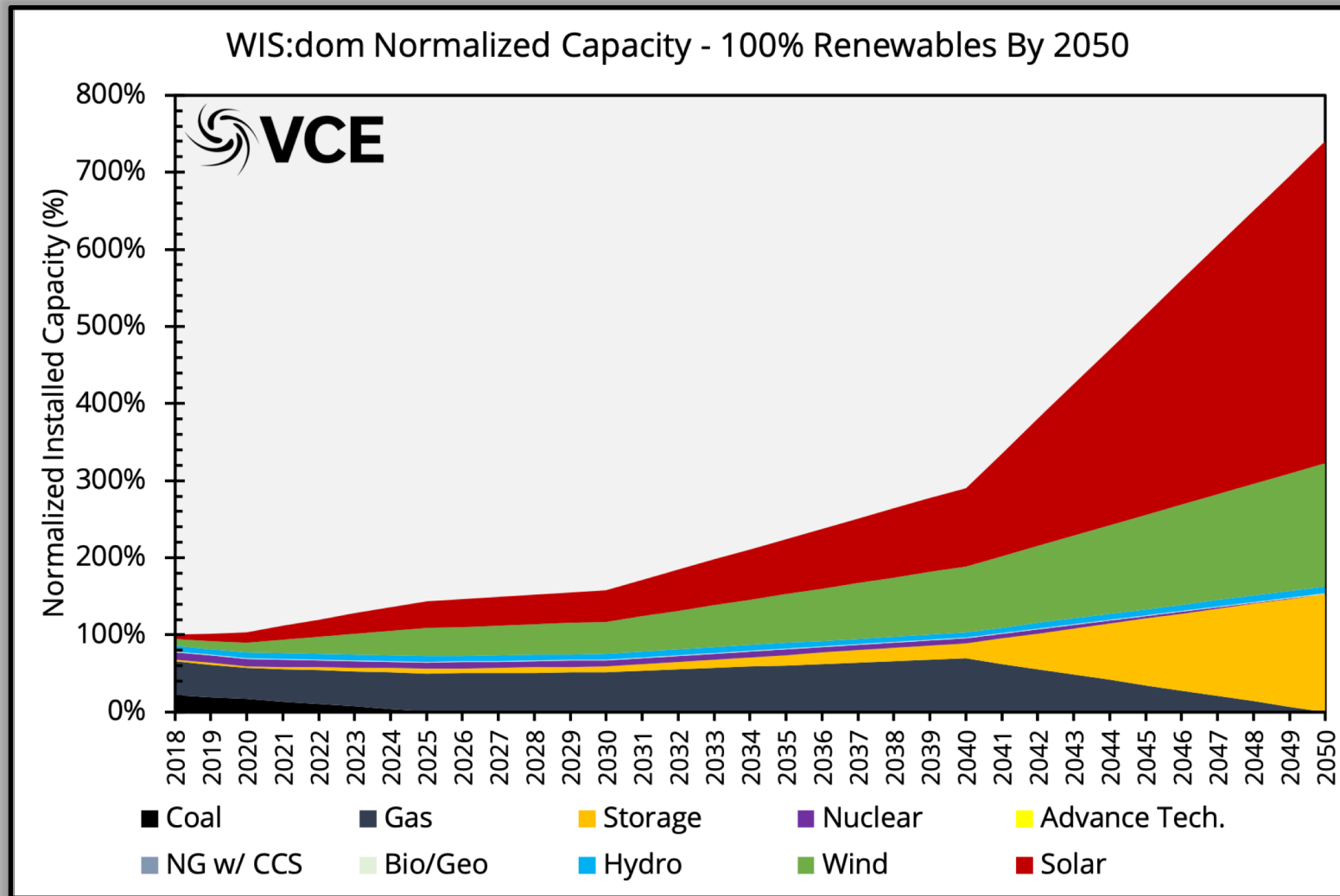


WIS:dom® Contains Detailed Solar Datasets

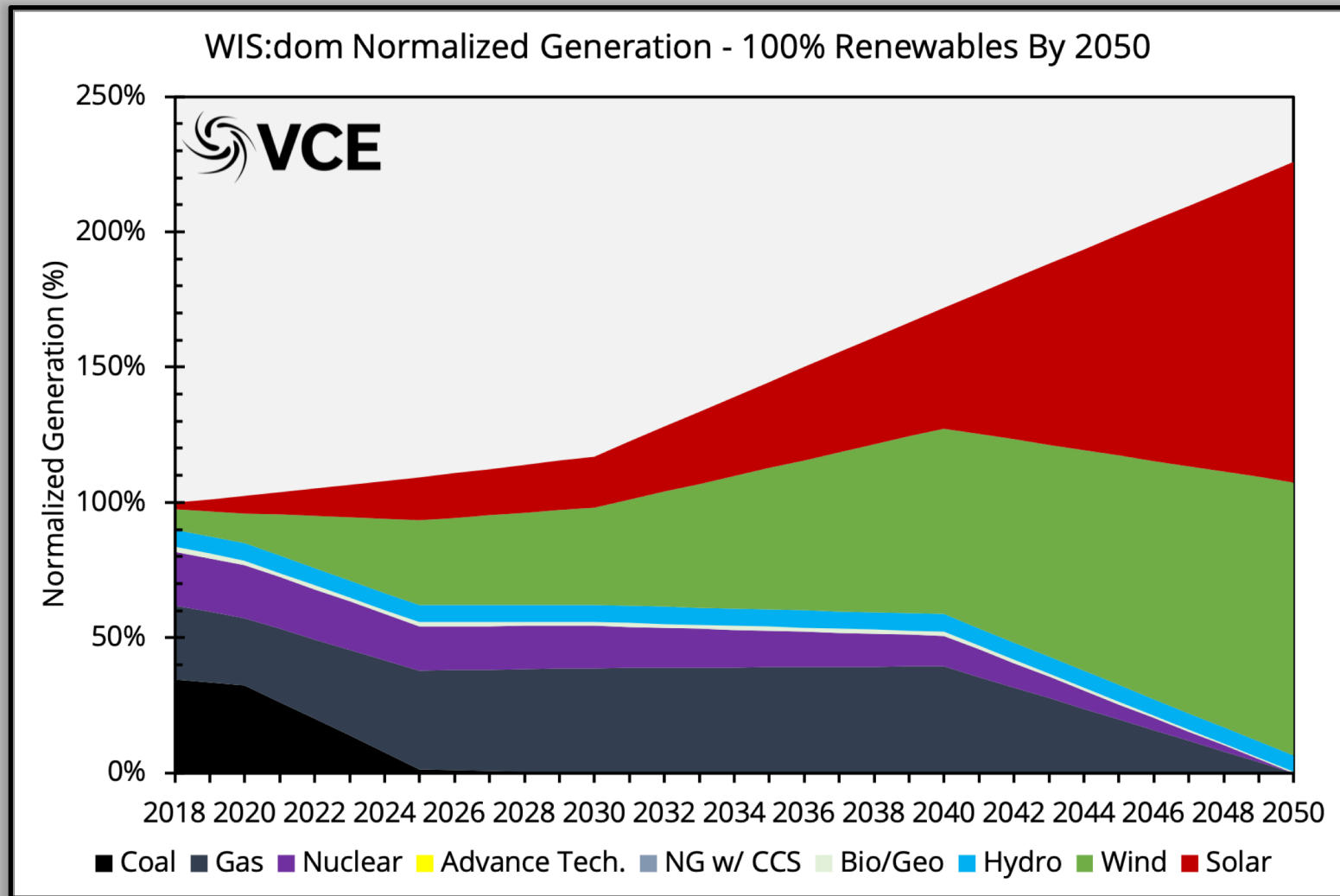


Some Illustrative Results

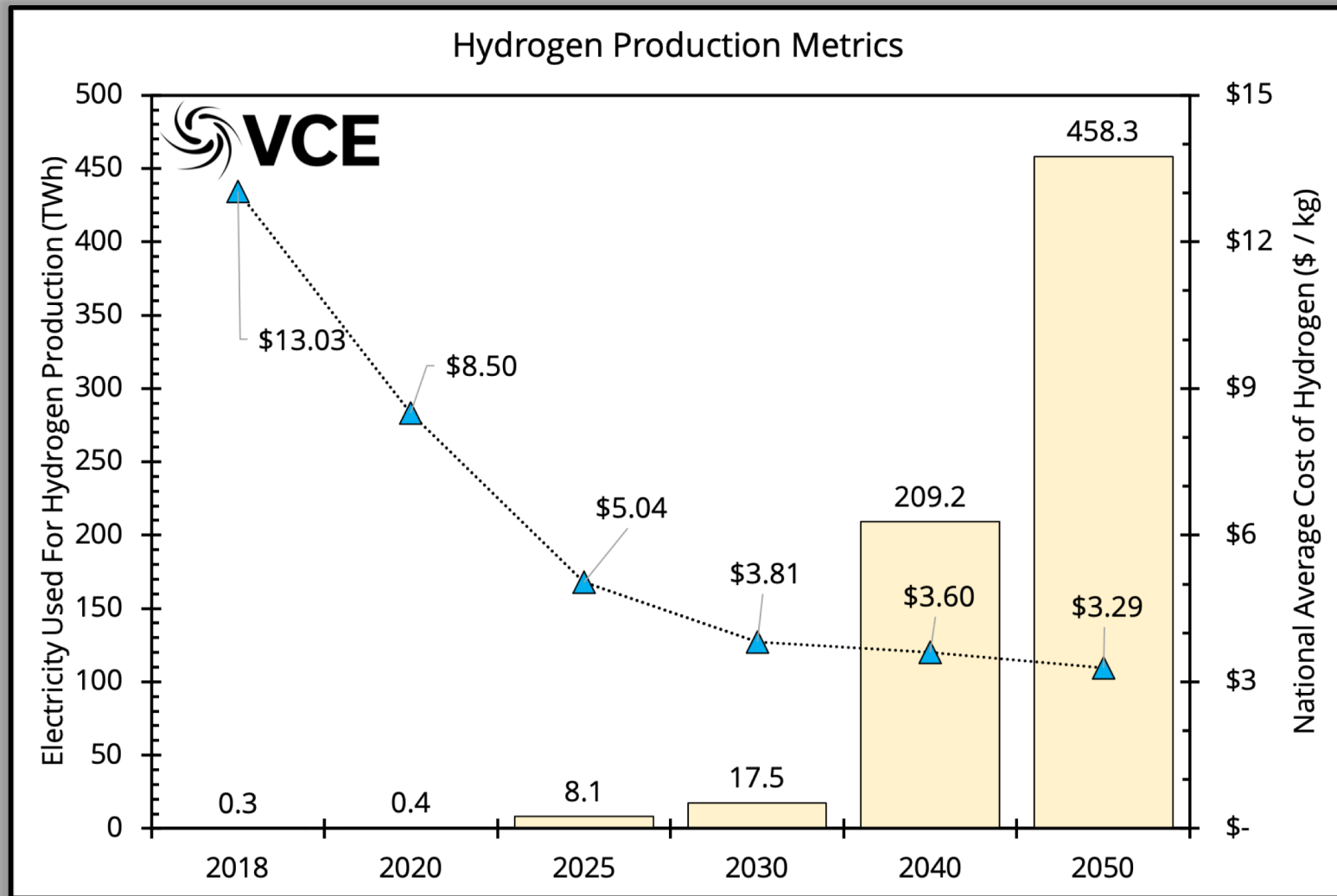
100% Renewable Energy for Contiguous US



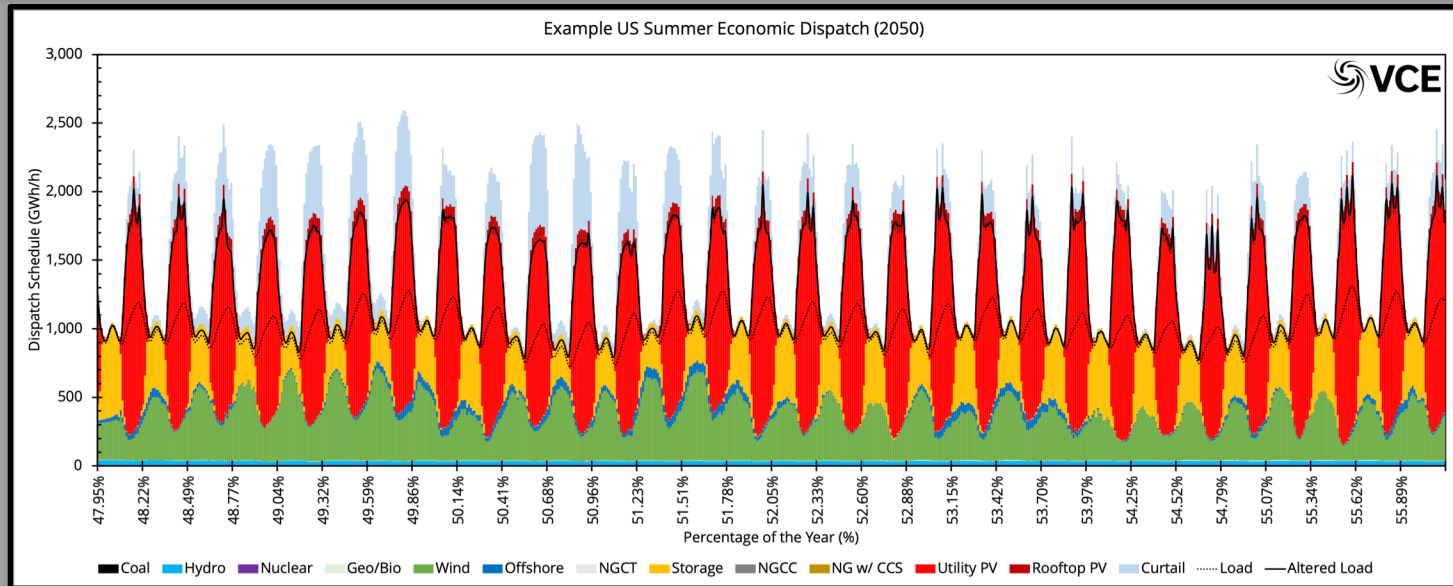
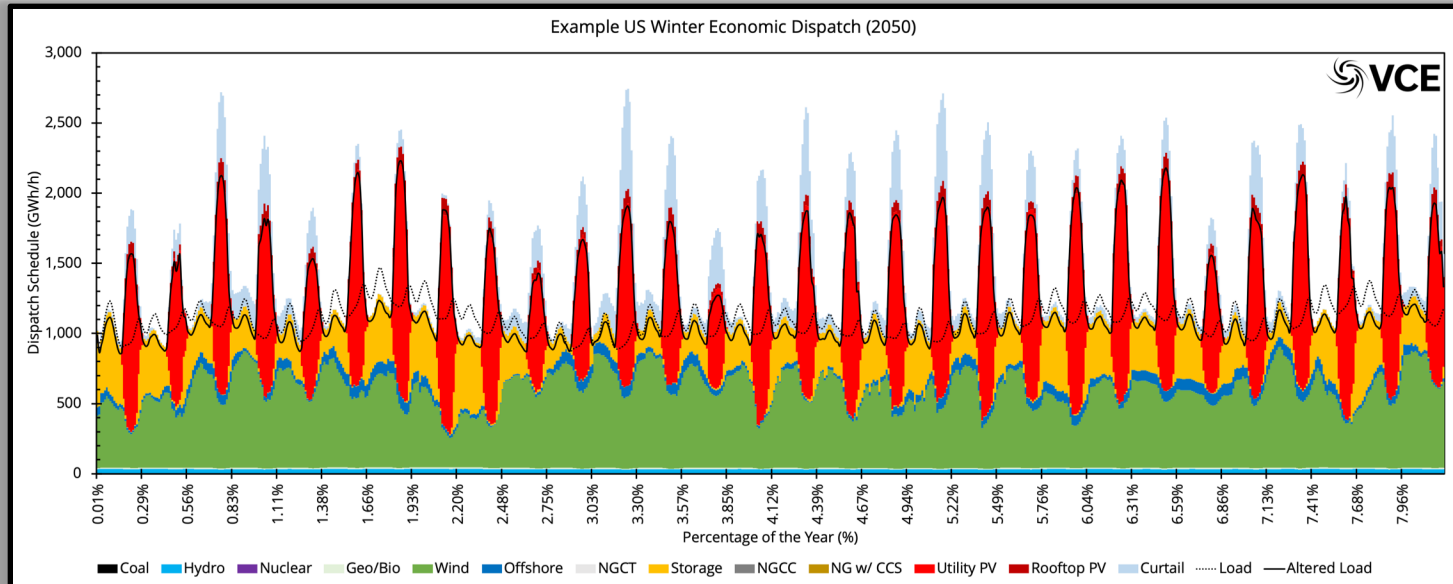
100% Renewable Energy for Contiguous US



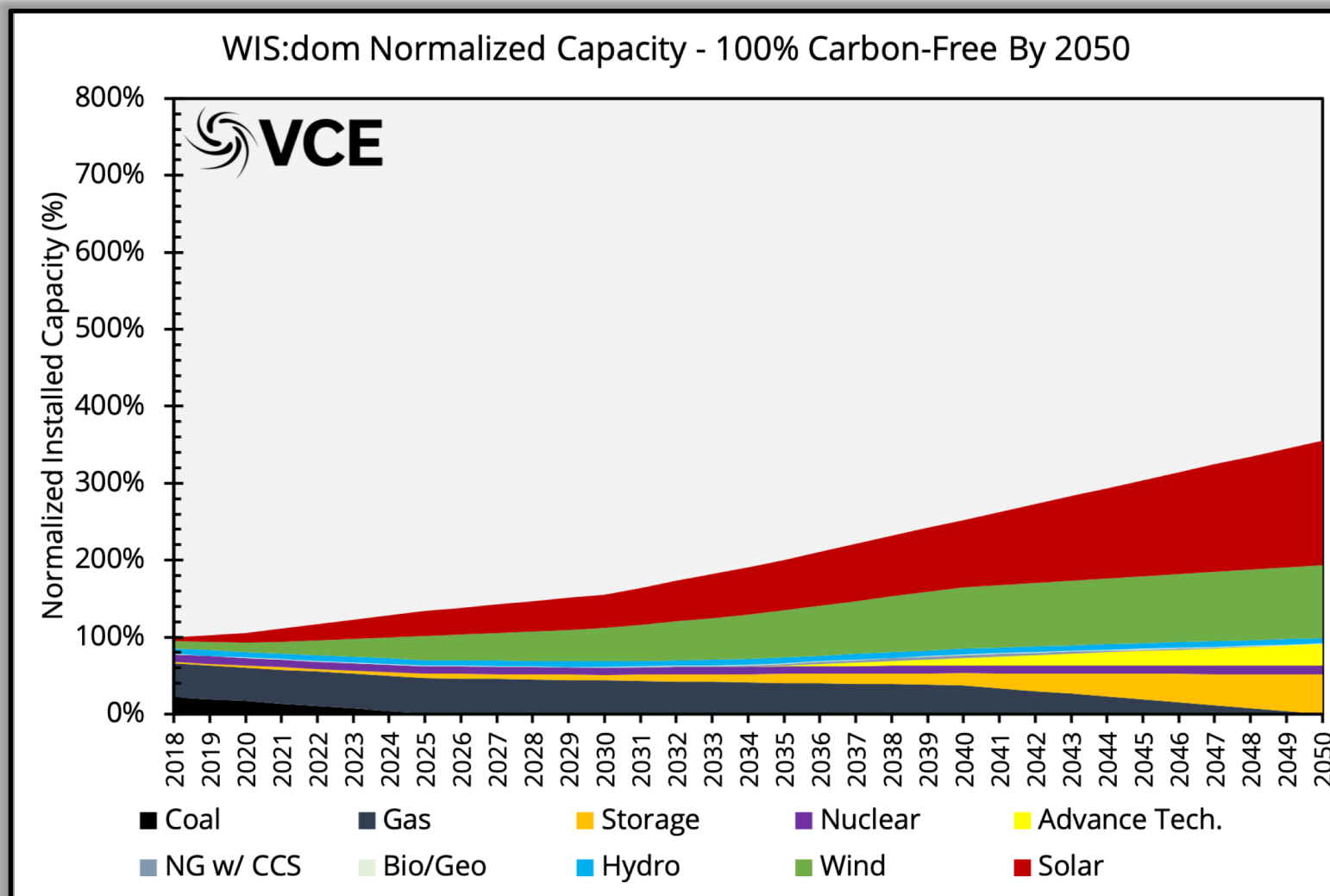
100% Renewable Energy for Contiguous US



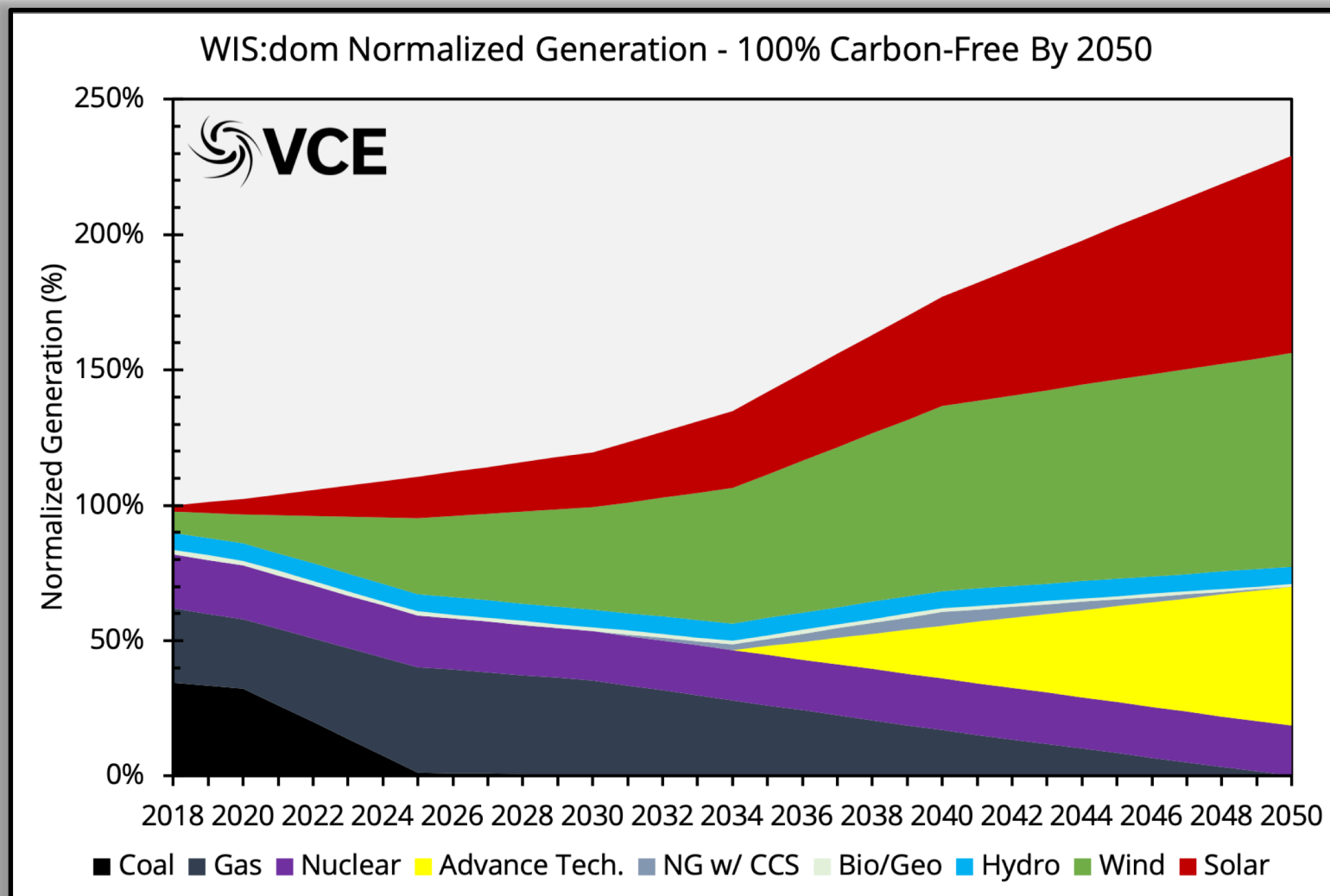
100% Renewable Energy for Contiguous US



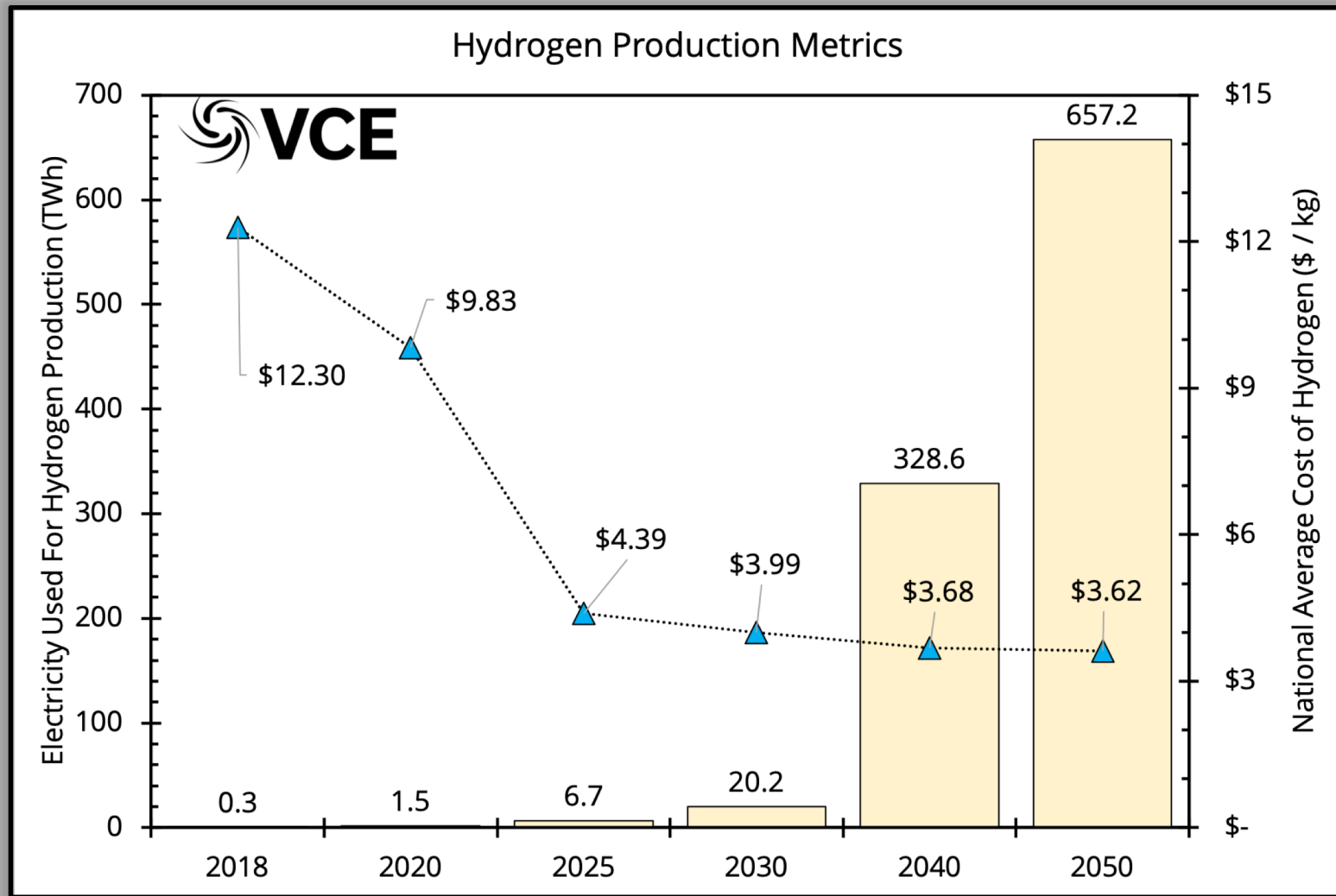
100% Clean Energy for Contiguous US



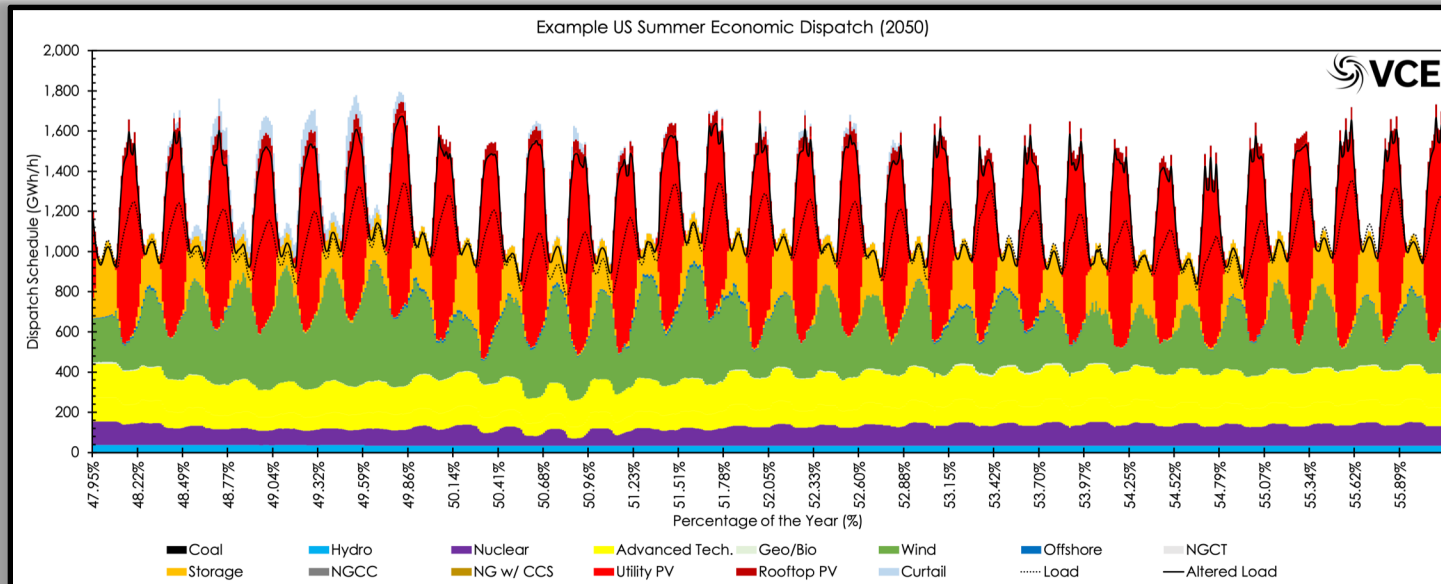
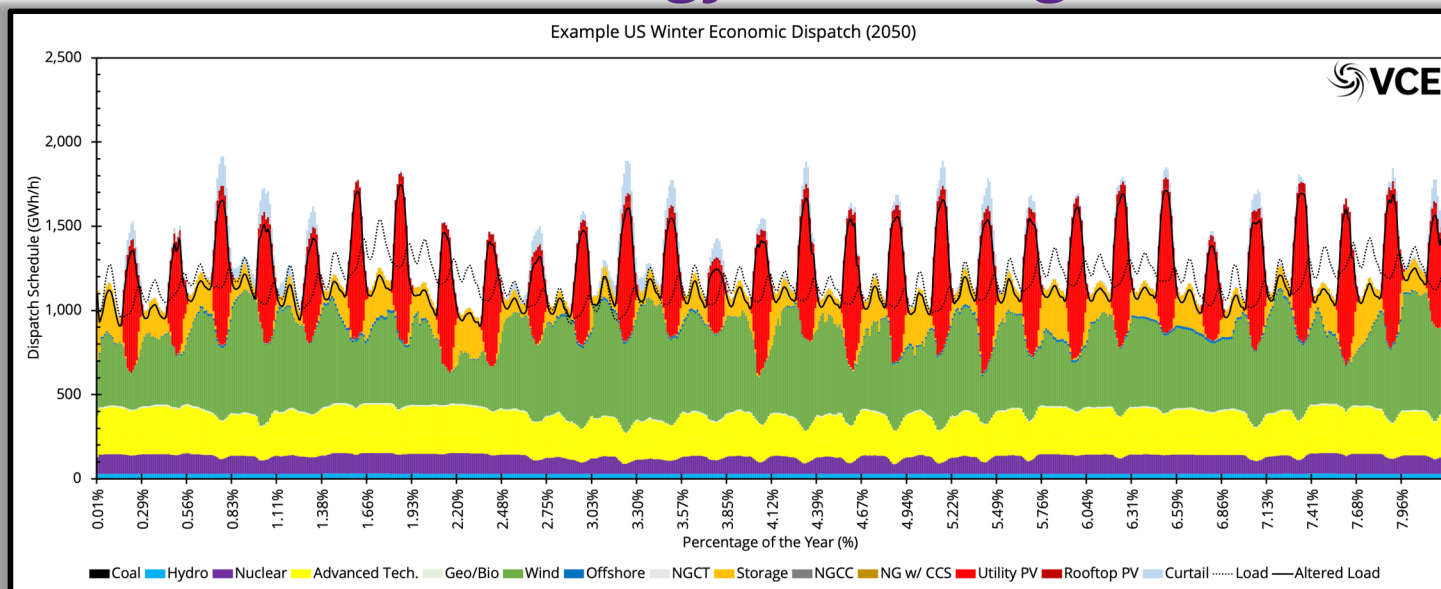
100% Clean Energy for Contiguous US



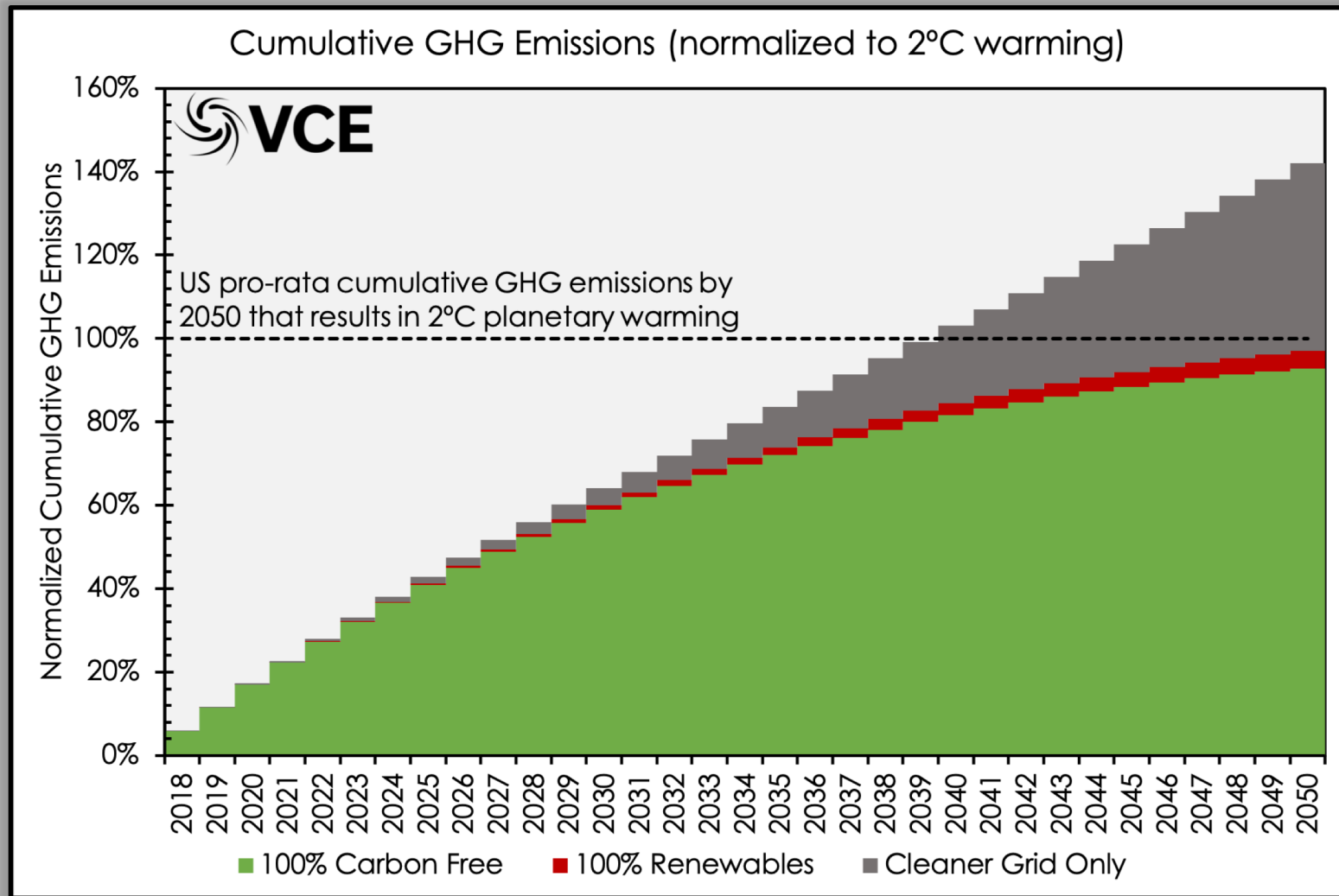
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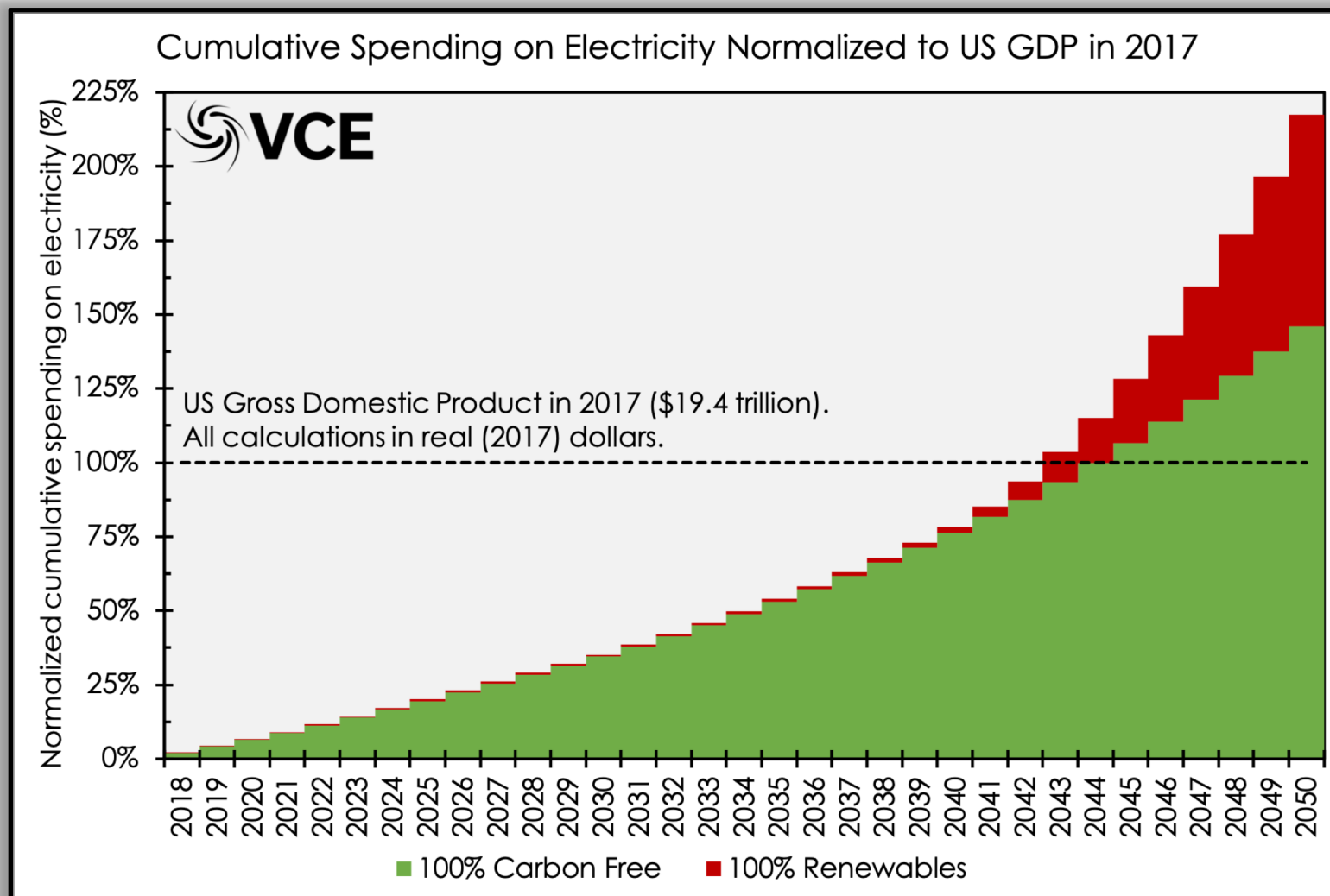
100% Clean Energy for Contiguous US



GHG Emissions for Contiguous US



Cumulative Electricity Costs for Contiguous US



Thank You Questions?

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