

Role of Renewable Energy in Electrification and Decarbonization

Prepared By:

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Prepared For:

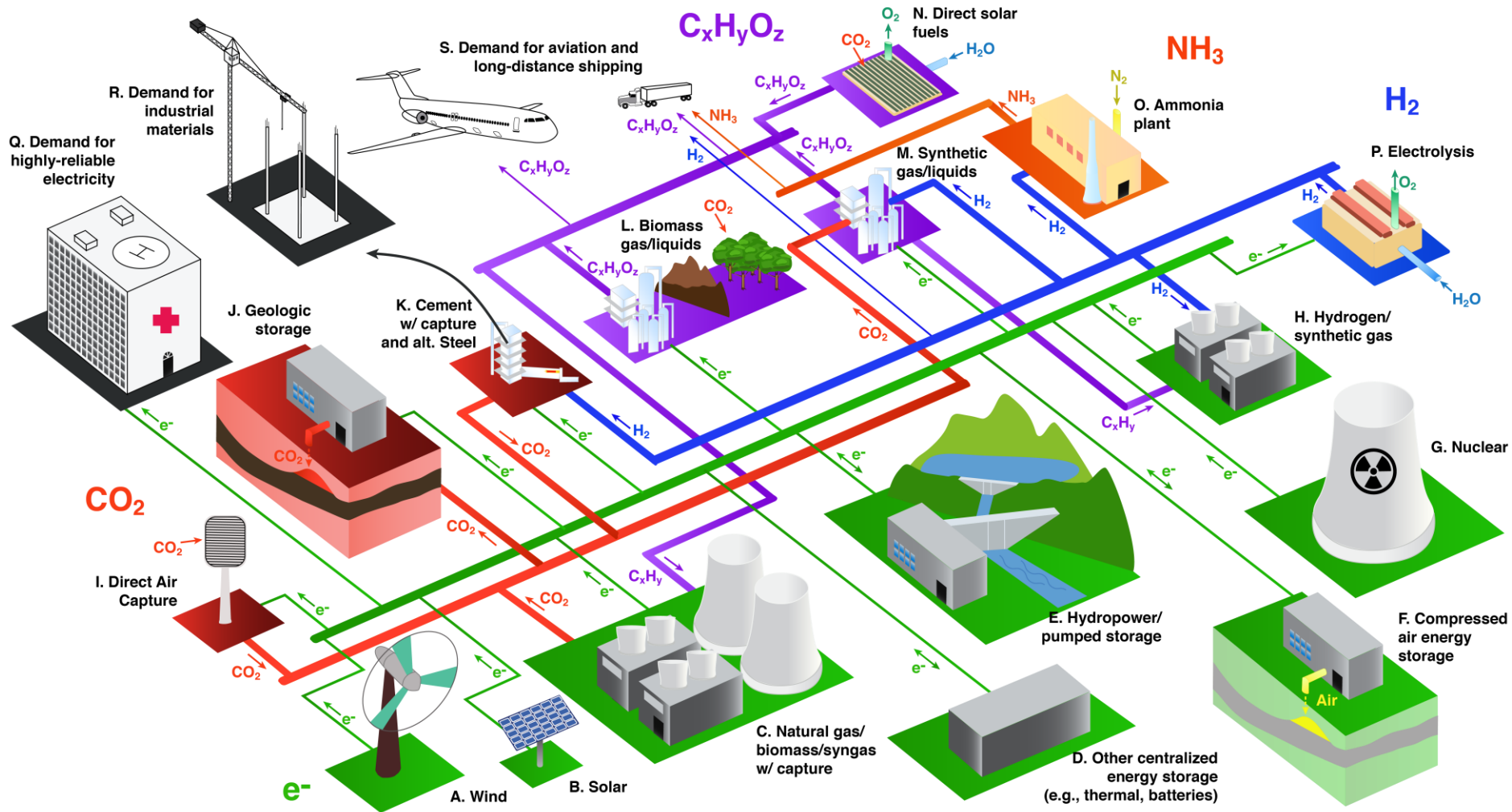
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The Whole Economy Needs Energy



Davis et al. *Science*, 2018

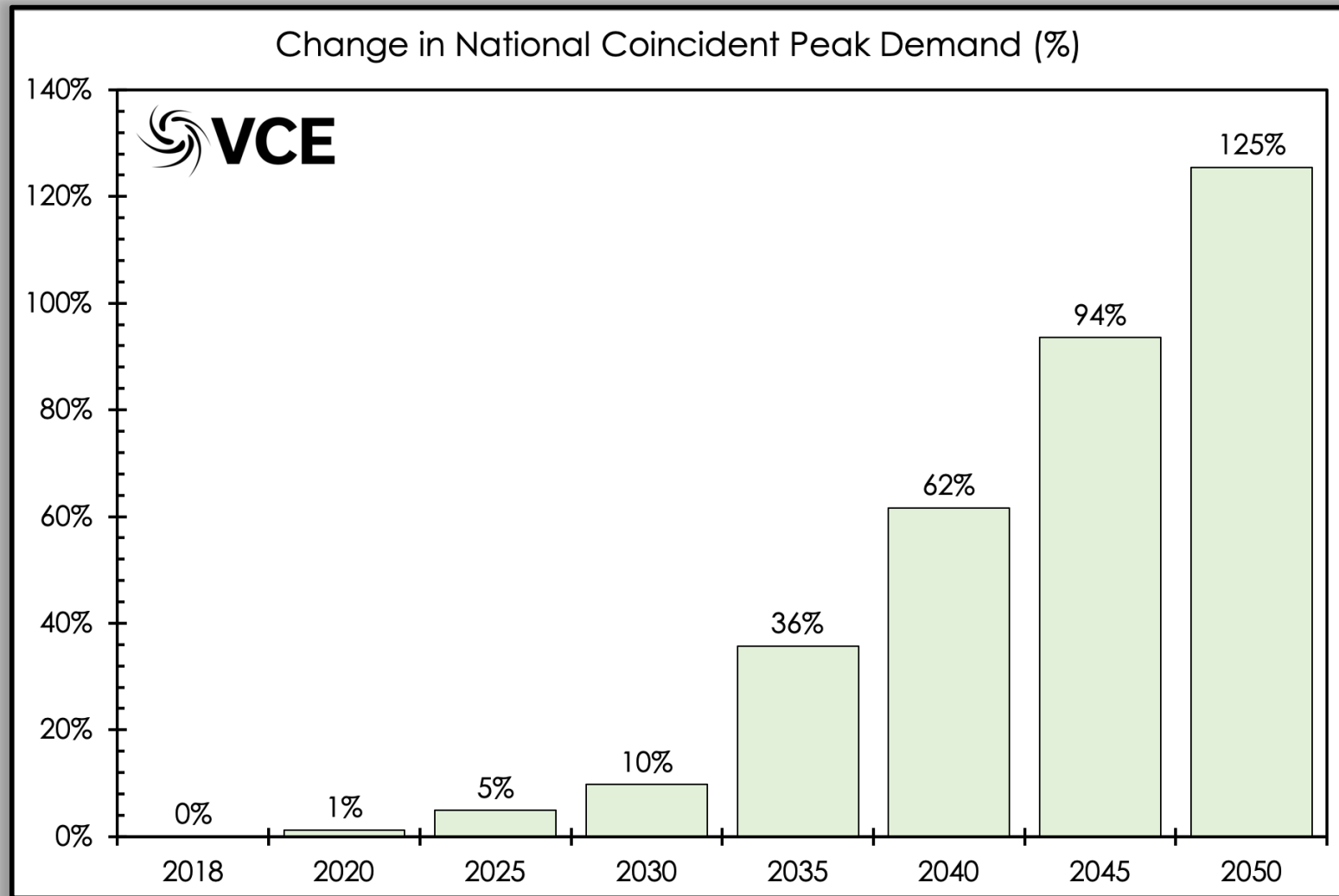


Electrification that WIS:dom[®] Considers

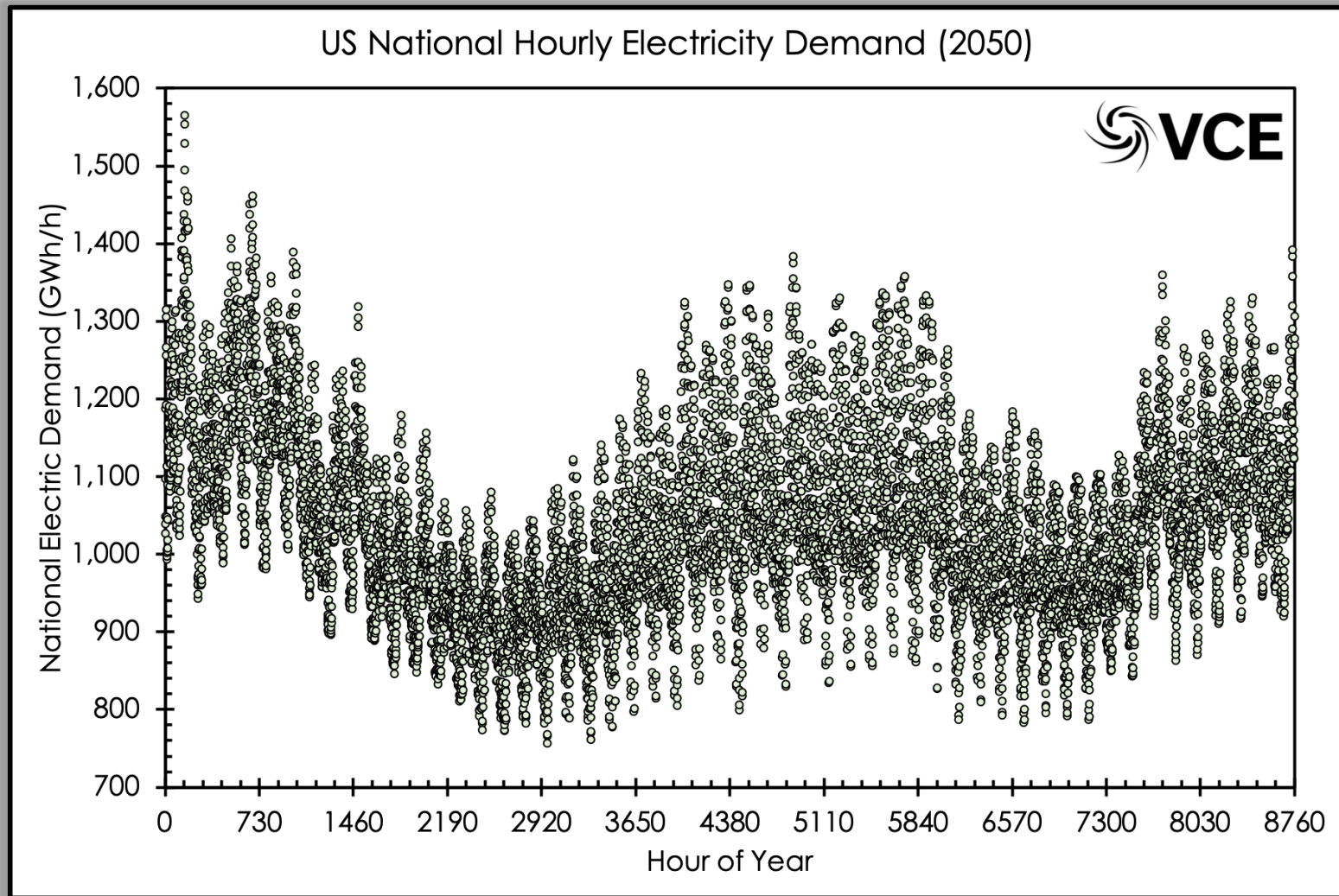
The WIS:dom[®] optimization model considers **electrification through**:

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 (Sabatier to Fischer-Tropsch Processes).*

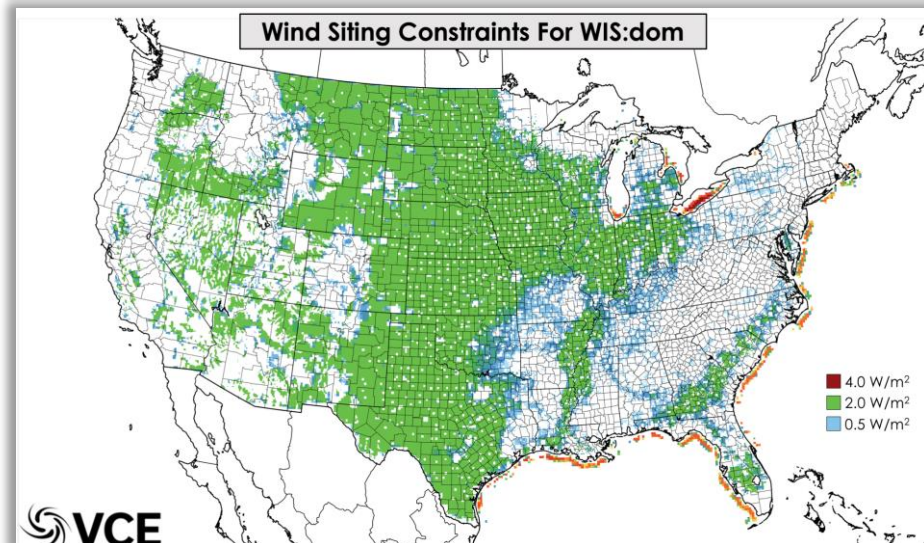
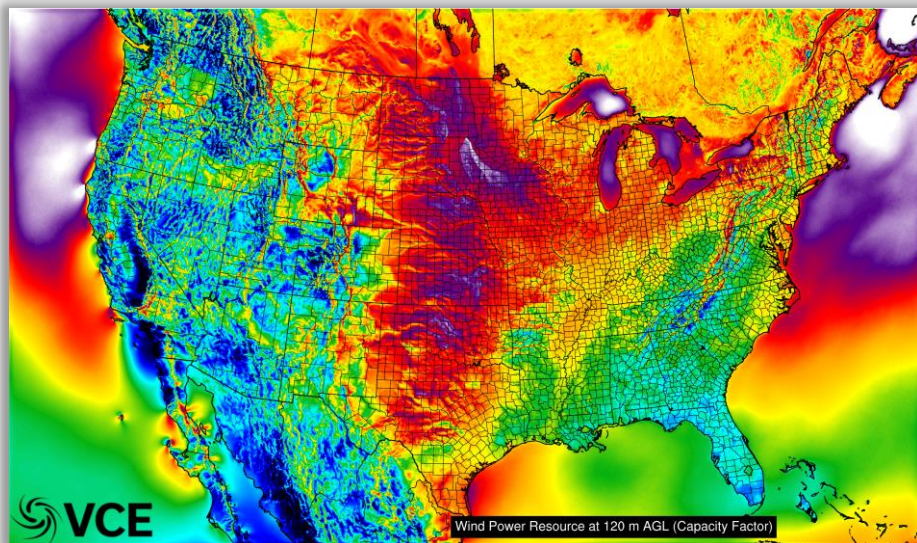
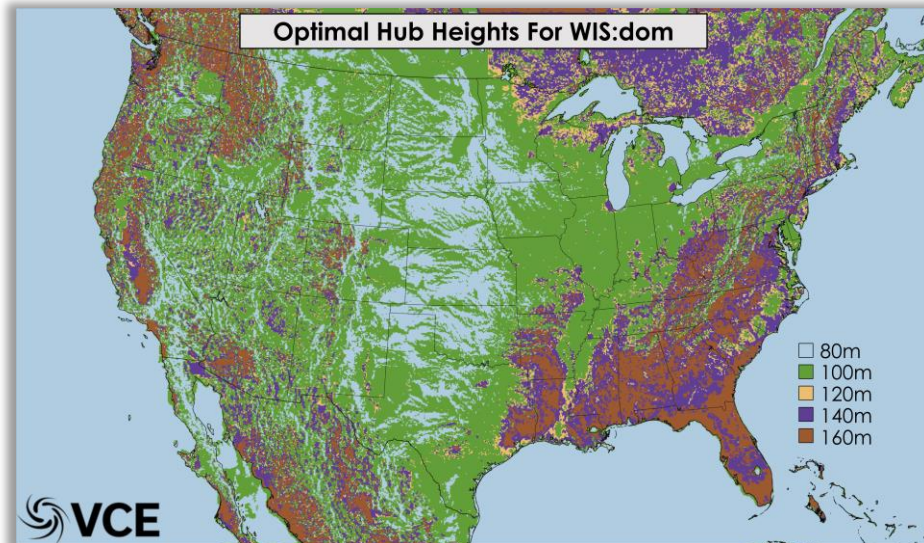
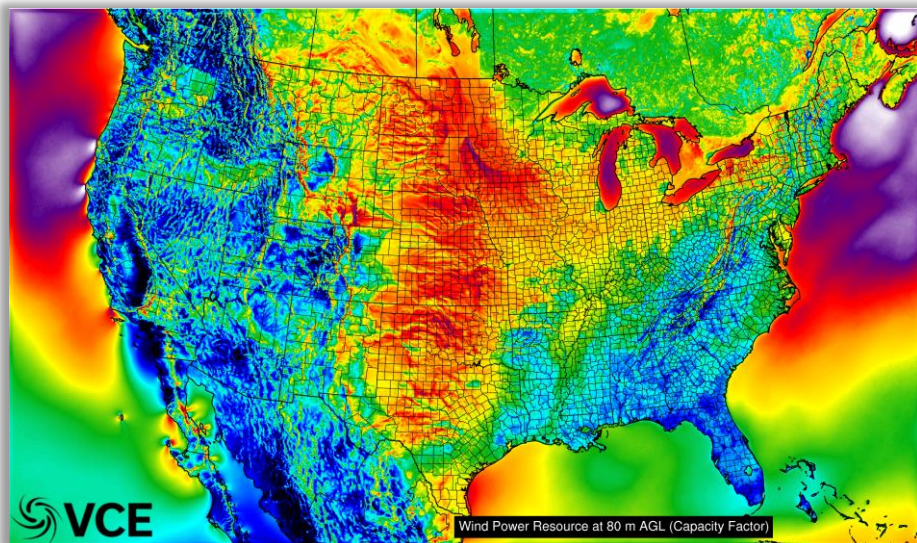
Electrification Changes Electricity Needs



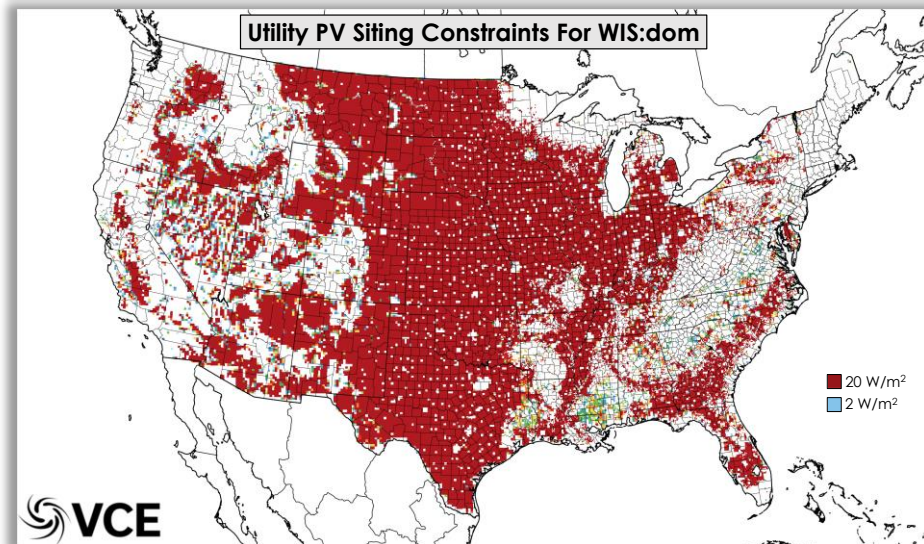
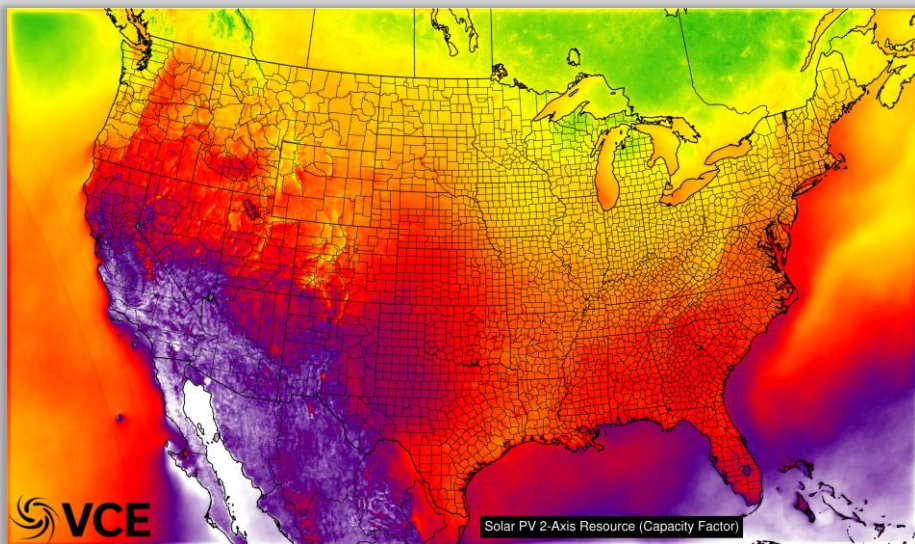
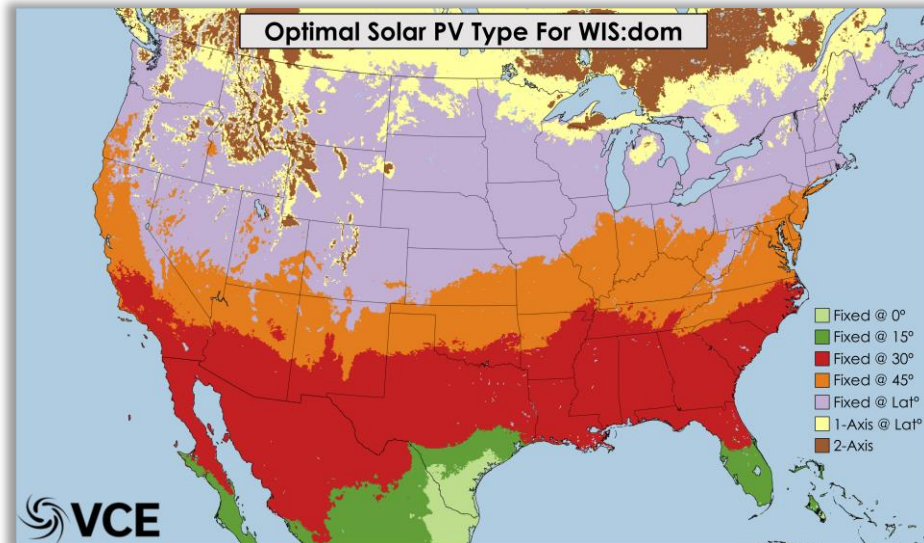
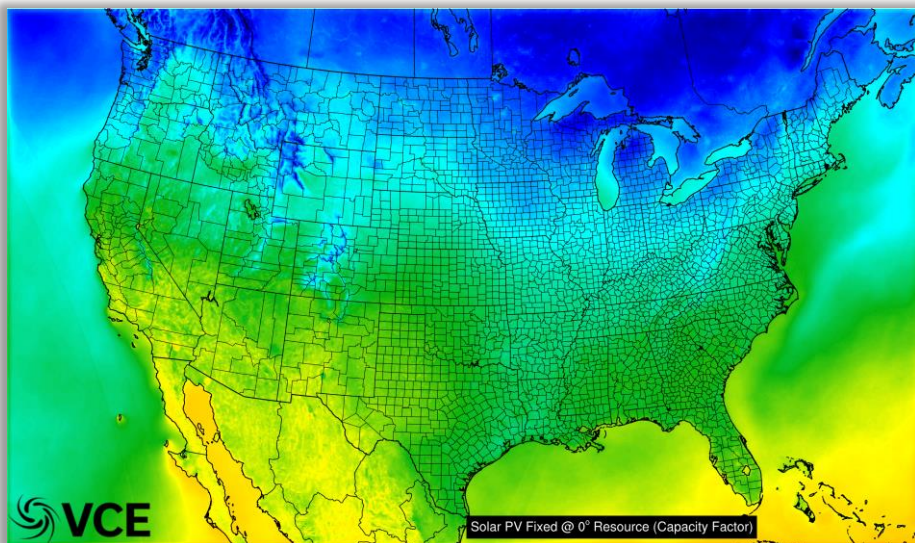
Electrification Changes Electricity Needs



WIS:dom[®] Contains Detailed Wind Datasets

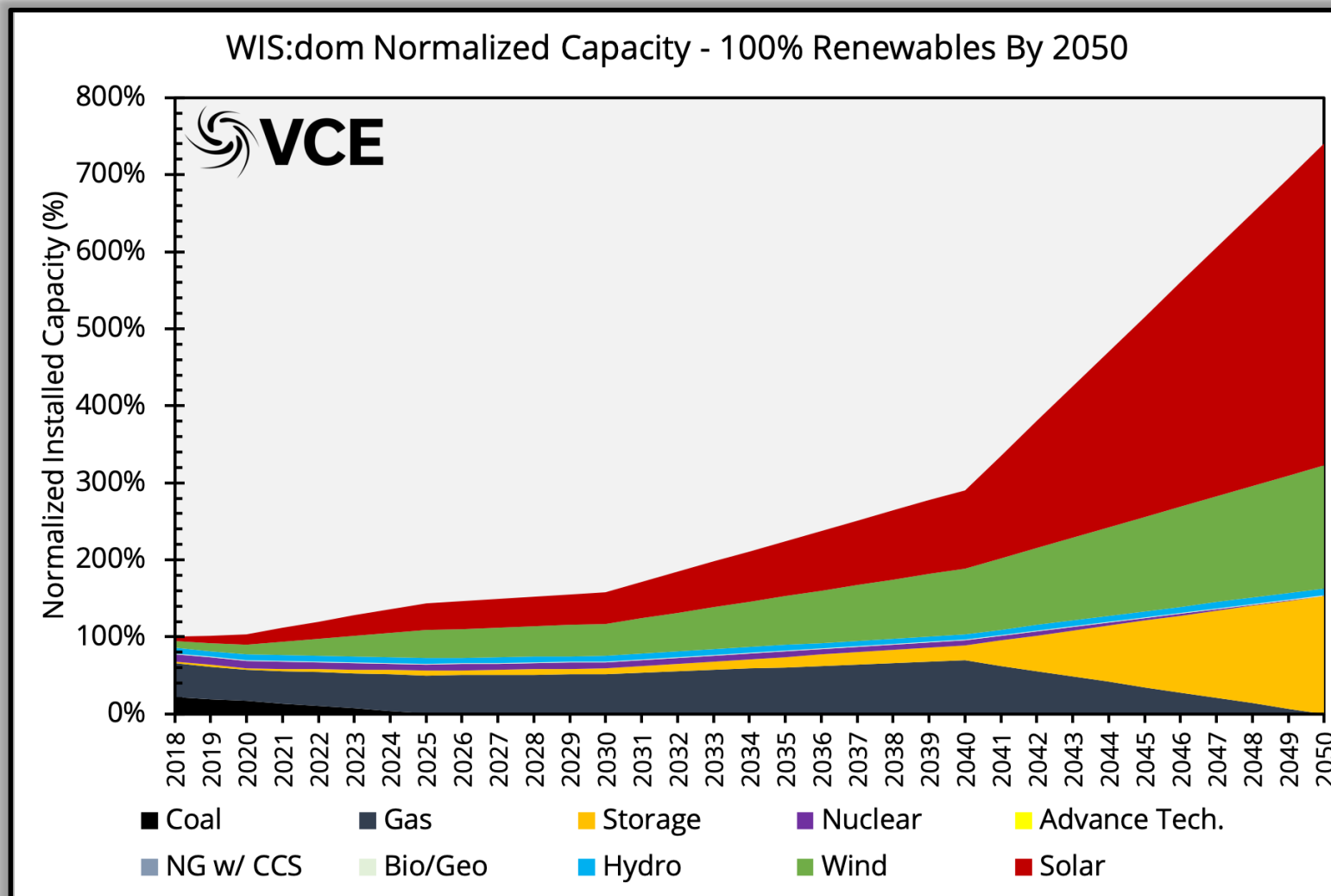


WIS:dom[®] Contains Detailed Solar Datasets

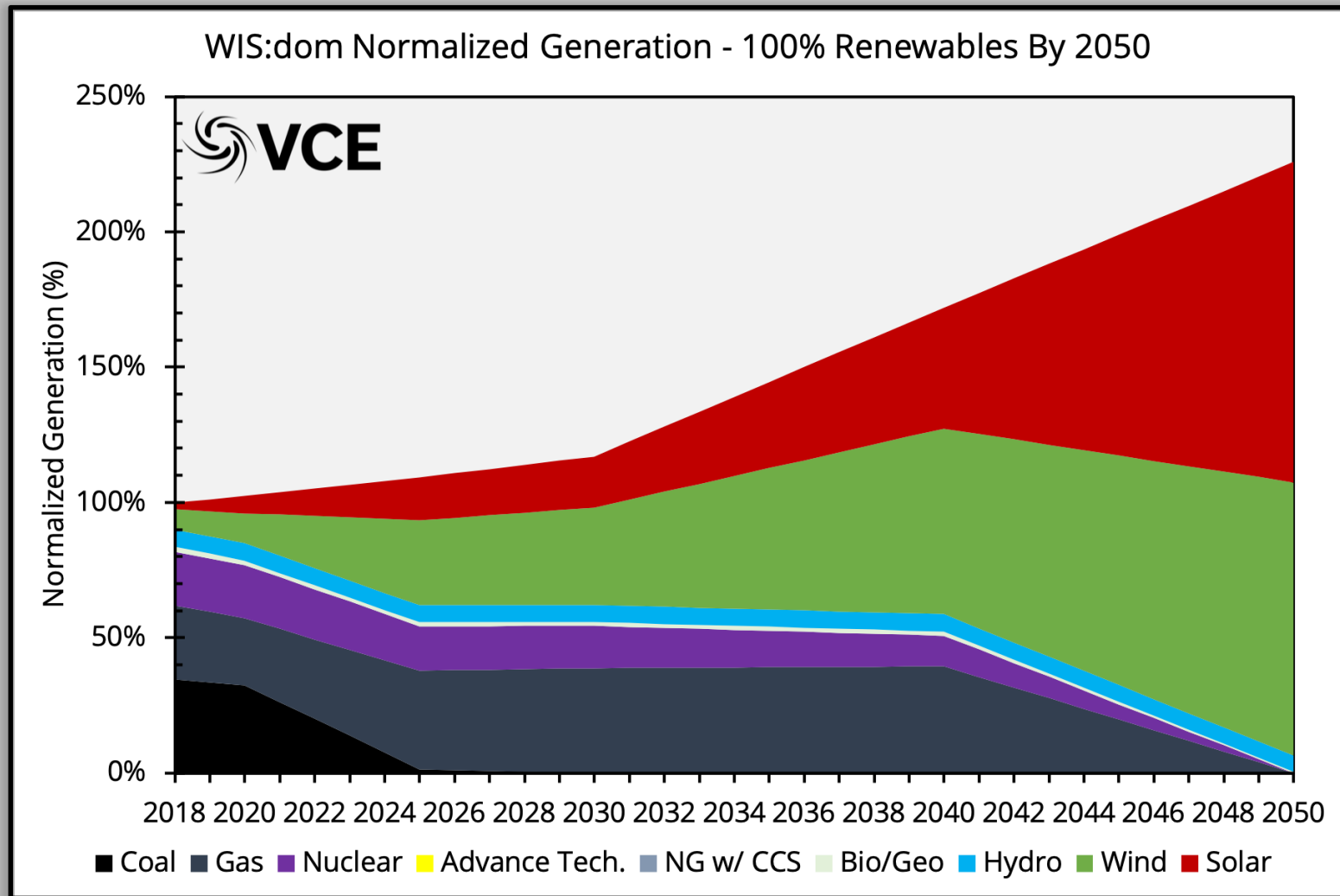


Some Illustrative Results

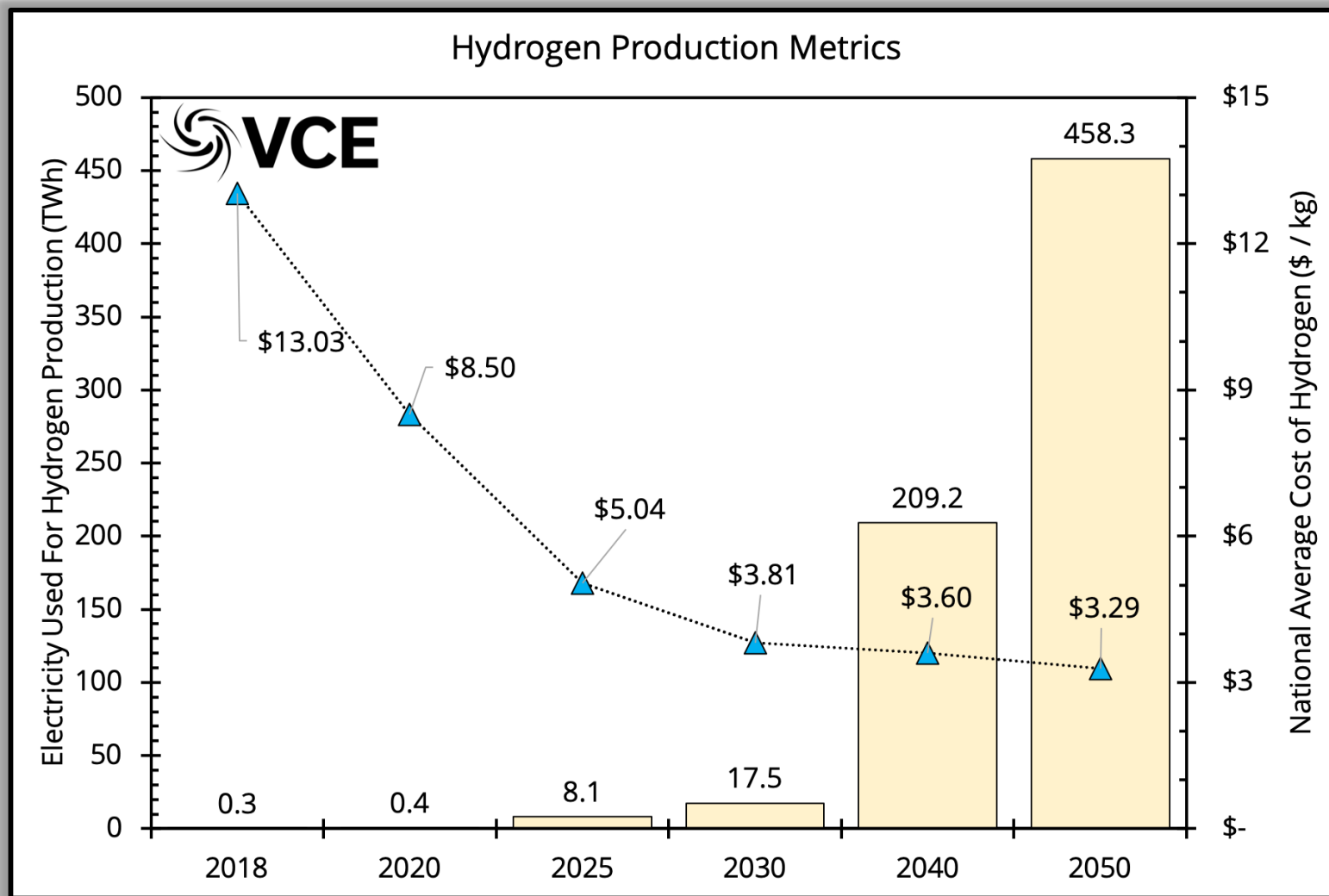
100% Renewable Energy for Contiguous US



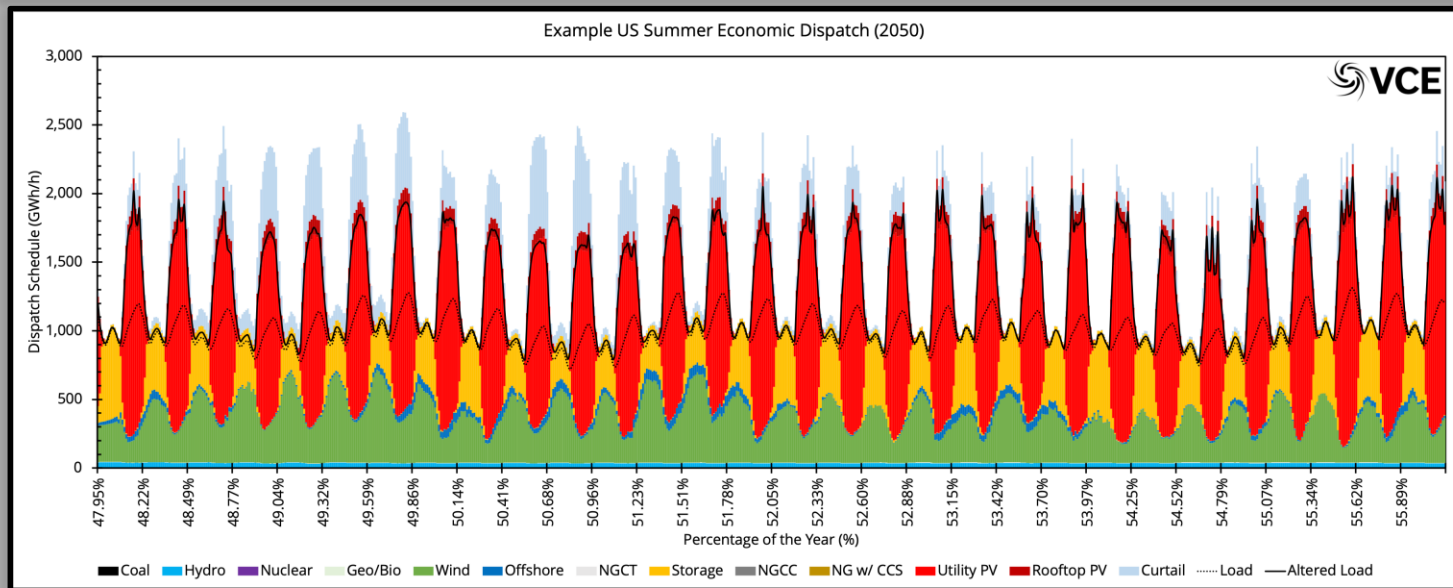
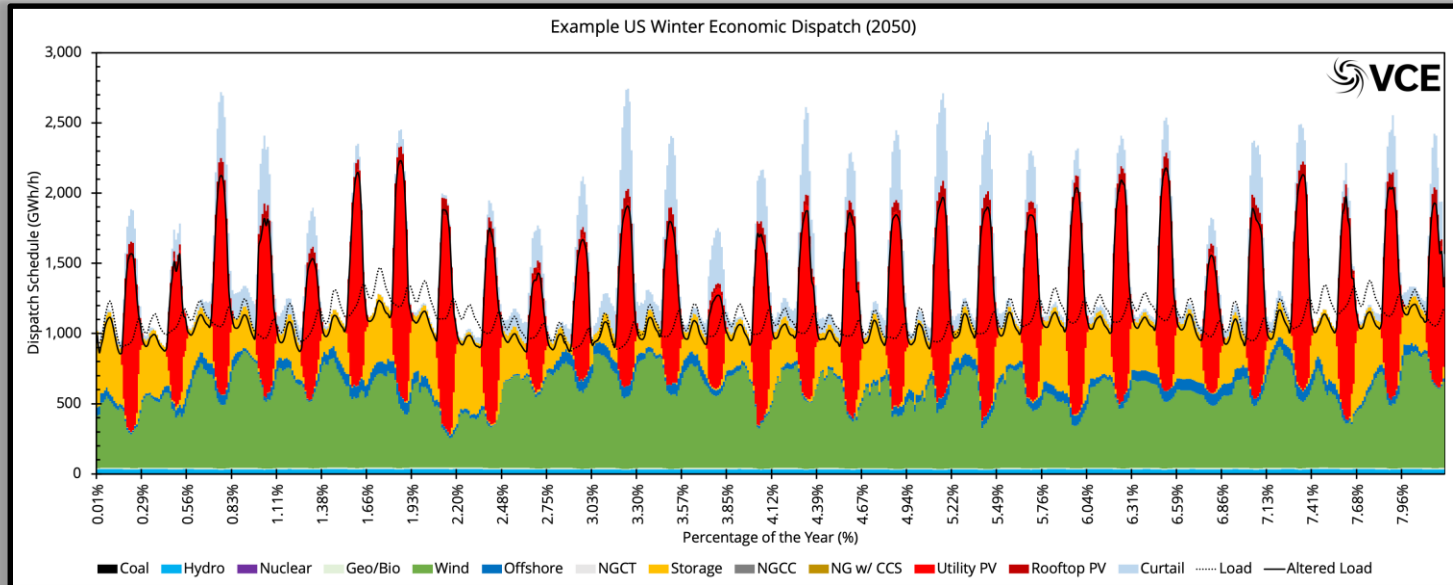
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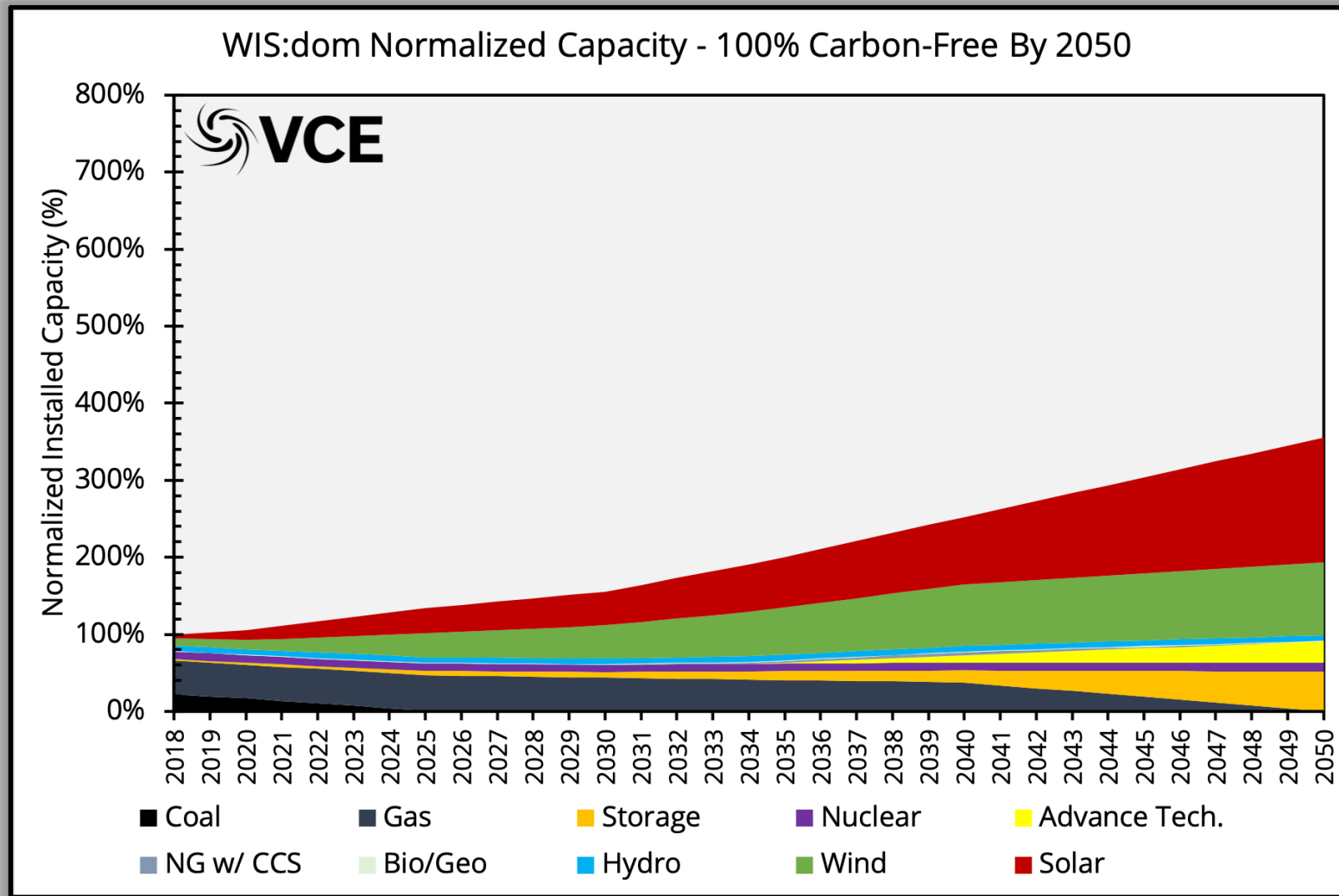
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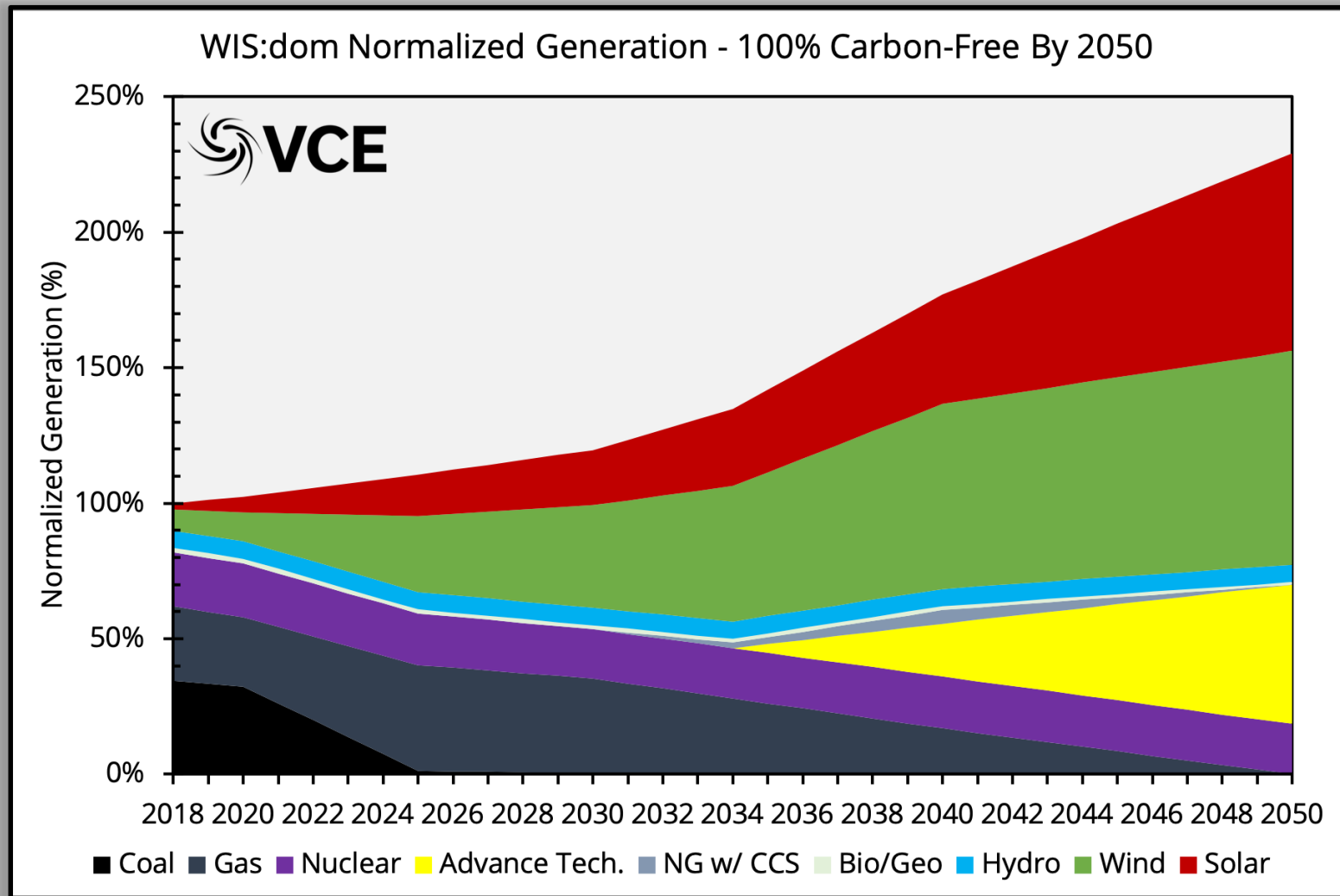
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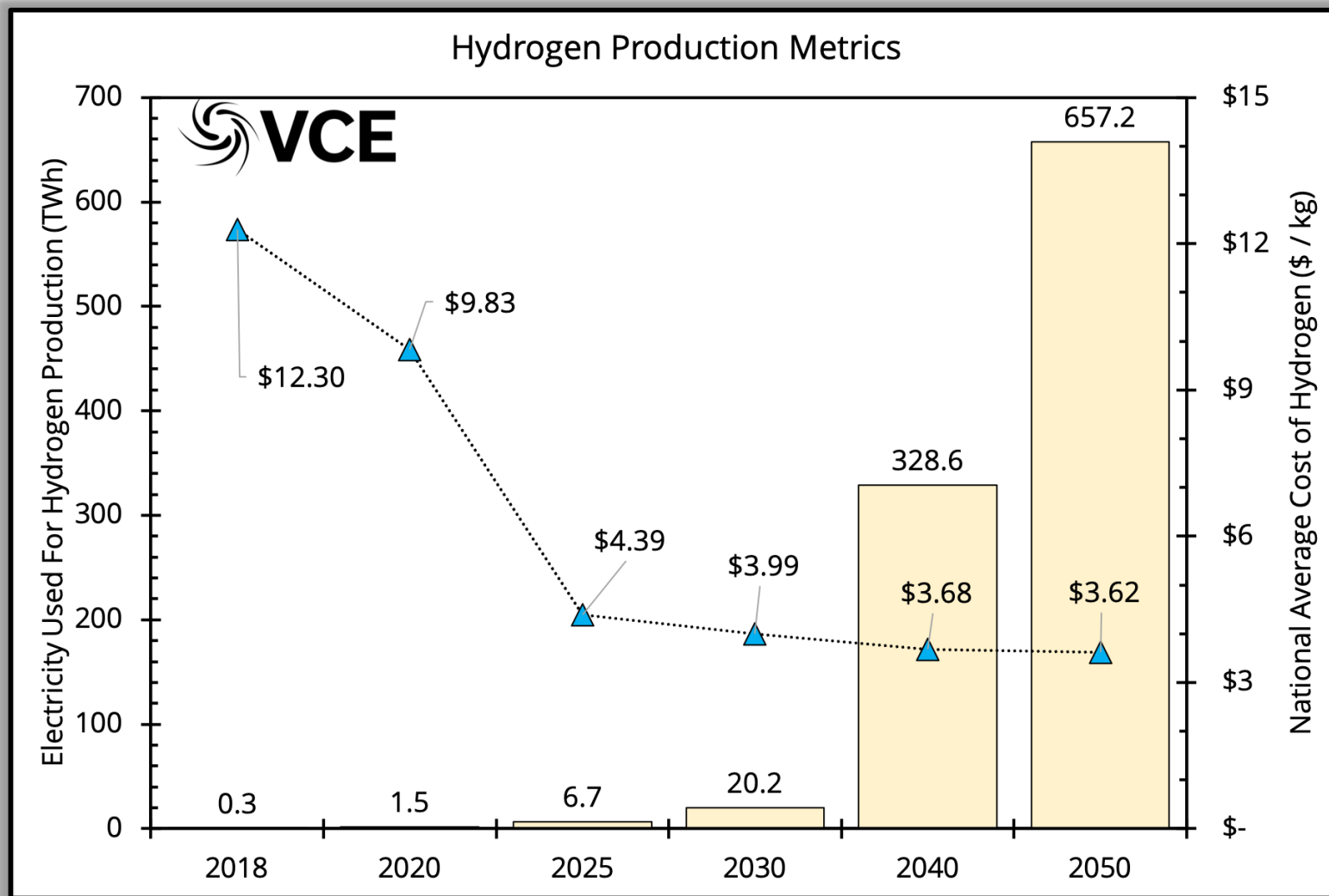
100% Clean Energy for Contiguous US



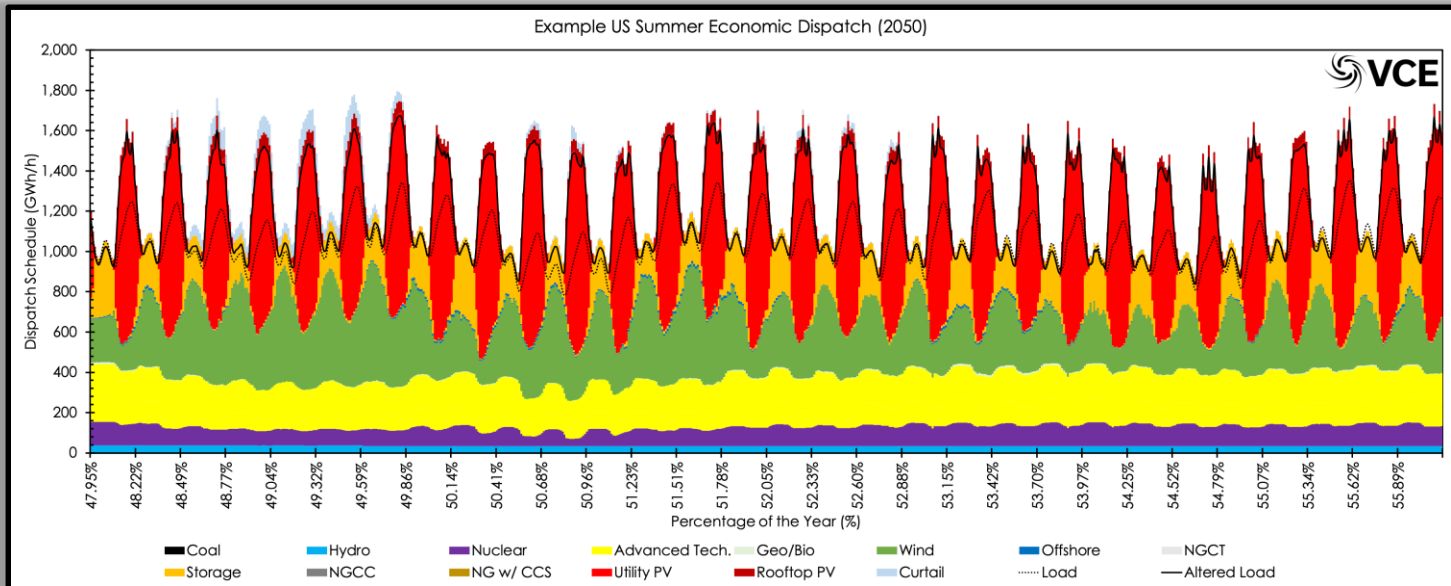
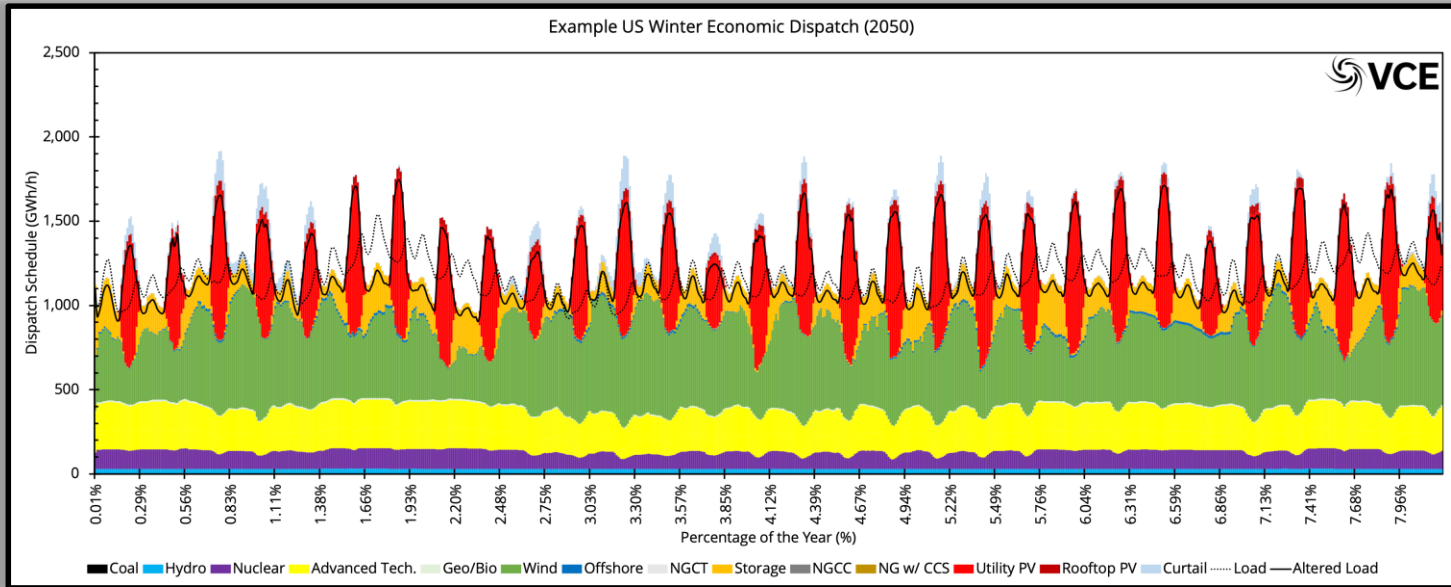
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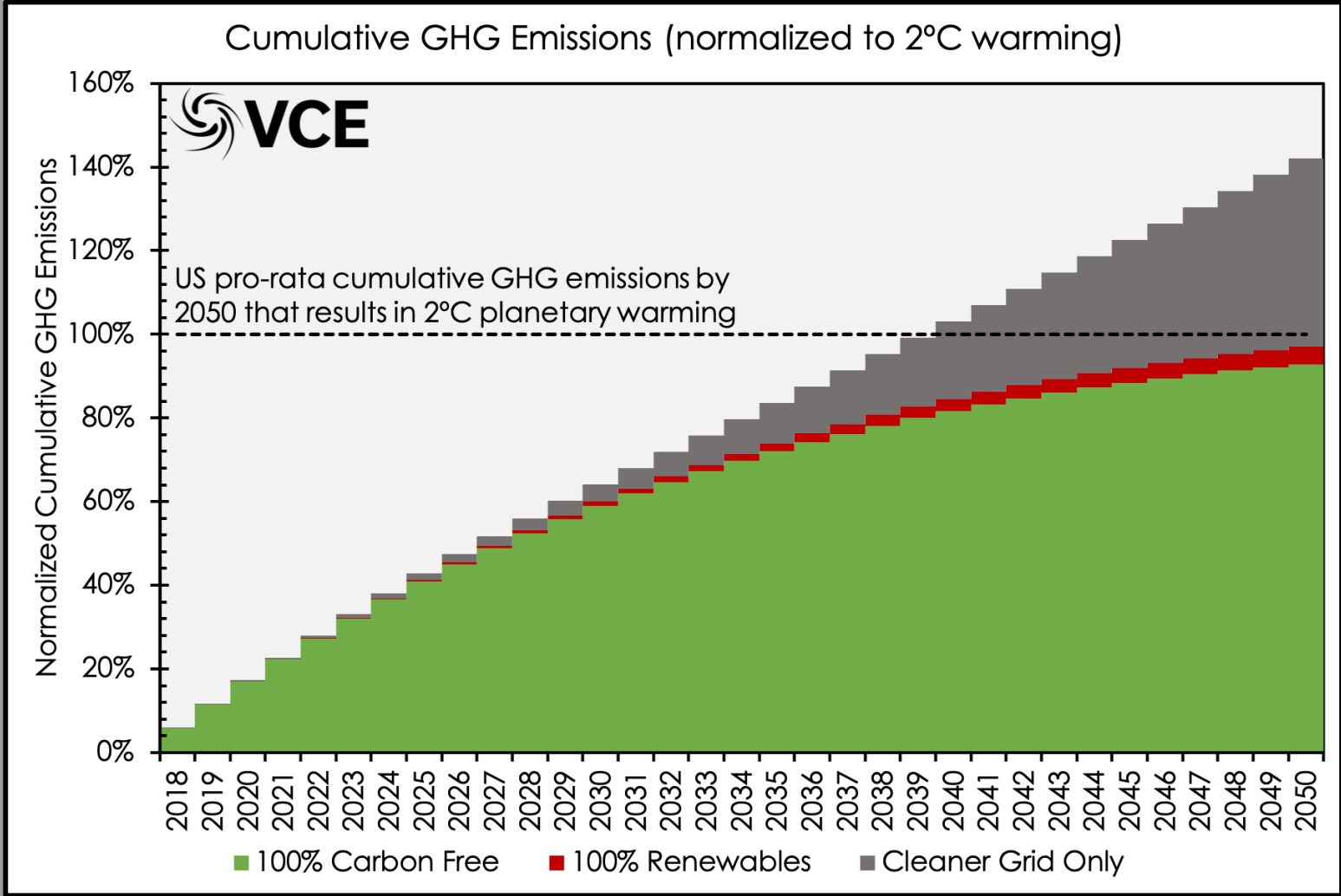
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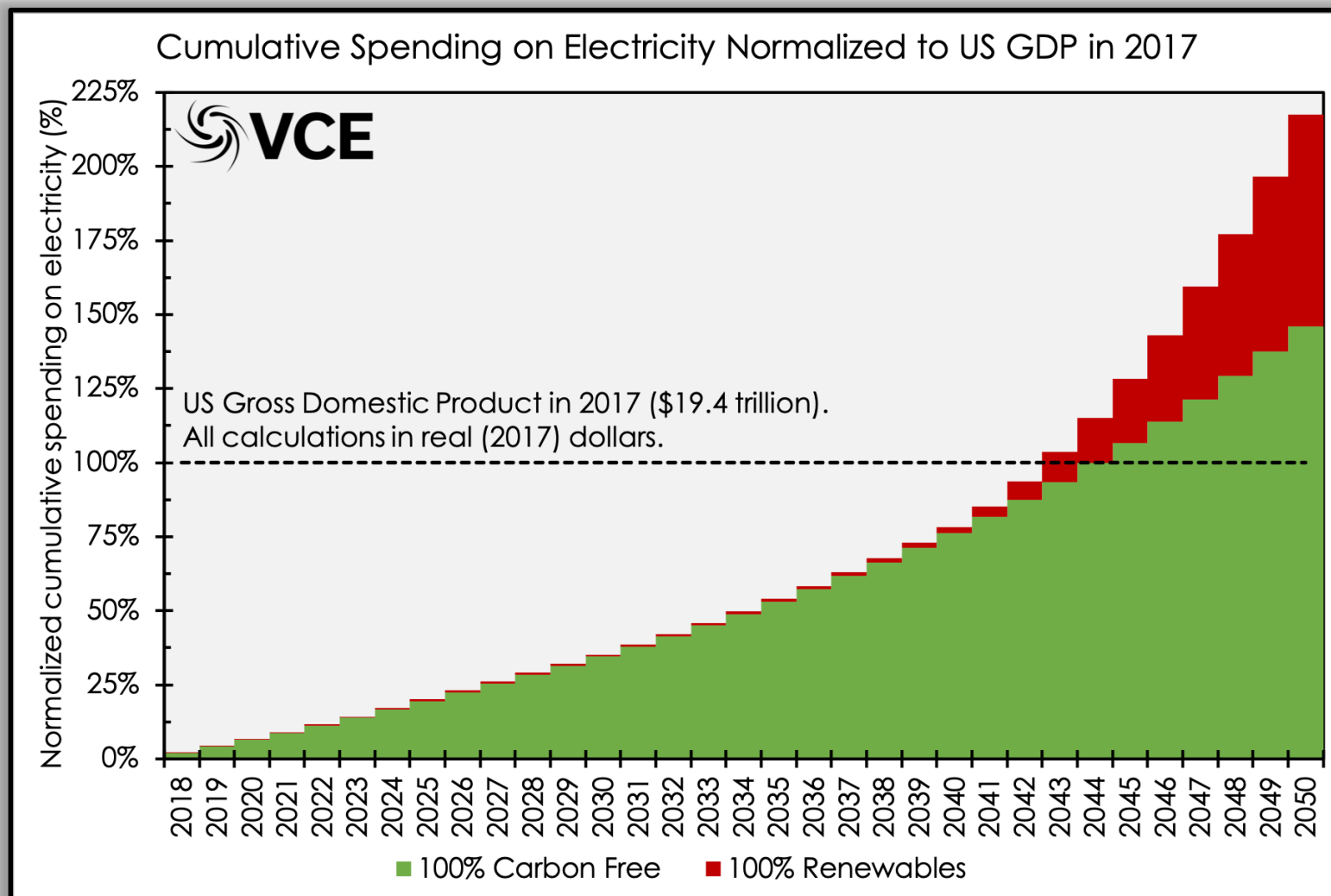
100% Clean Energy for Contiguous US



GHG Emissions for Contiguous US



Cumulative Electricity Costs for Contiguous US



Thank You

Questions?

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