

Wind Vision:

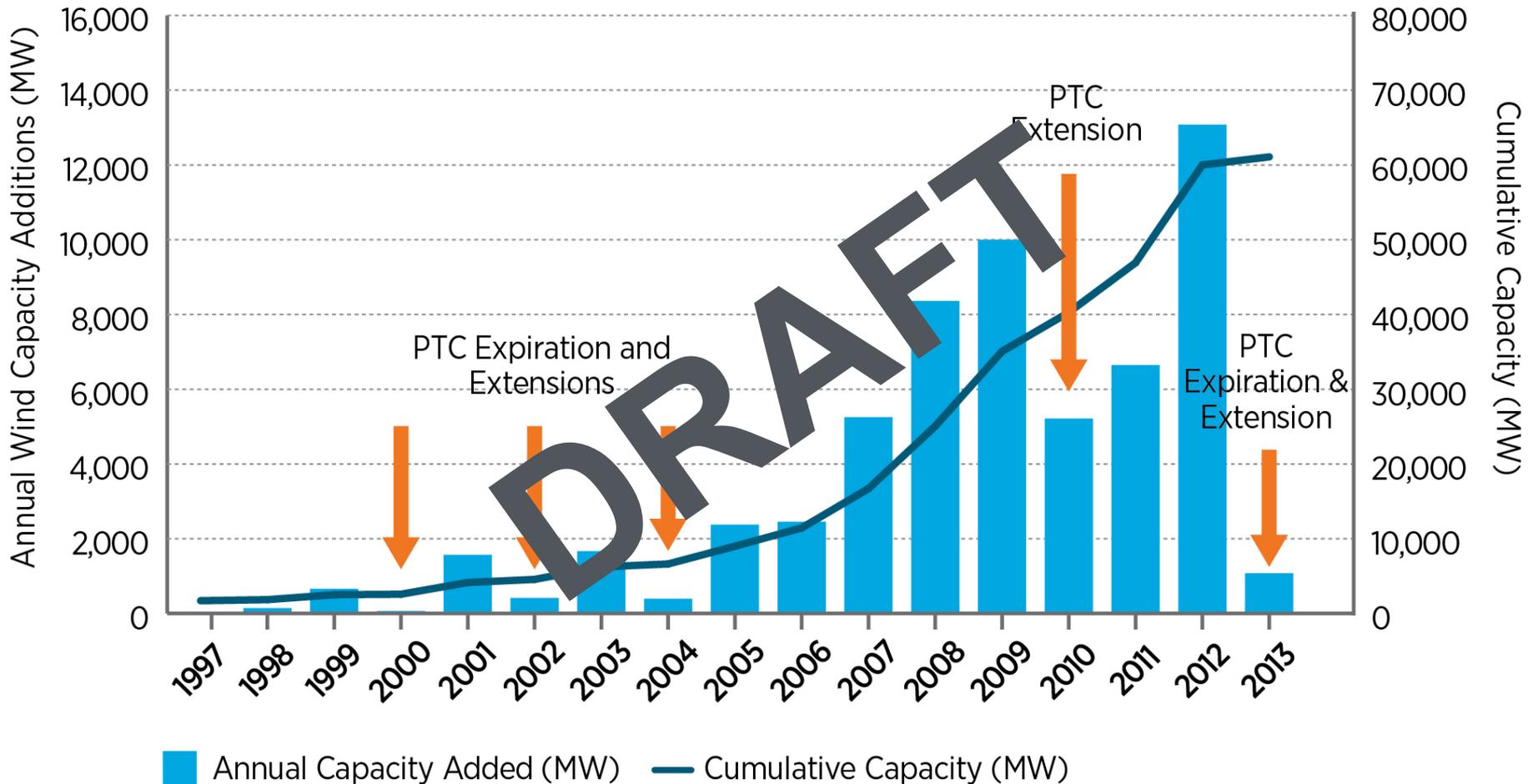
A New Era for Wind Power
in the United States

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U.S. DEPARTMENT OF
ENERGY

Policy uncertainty has resulted in fluctuations in historical wind deployment



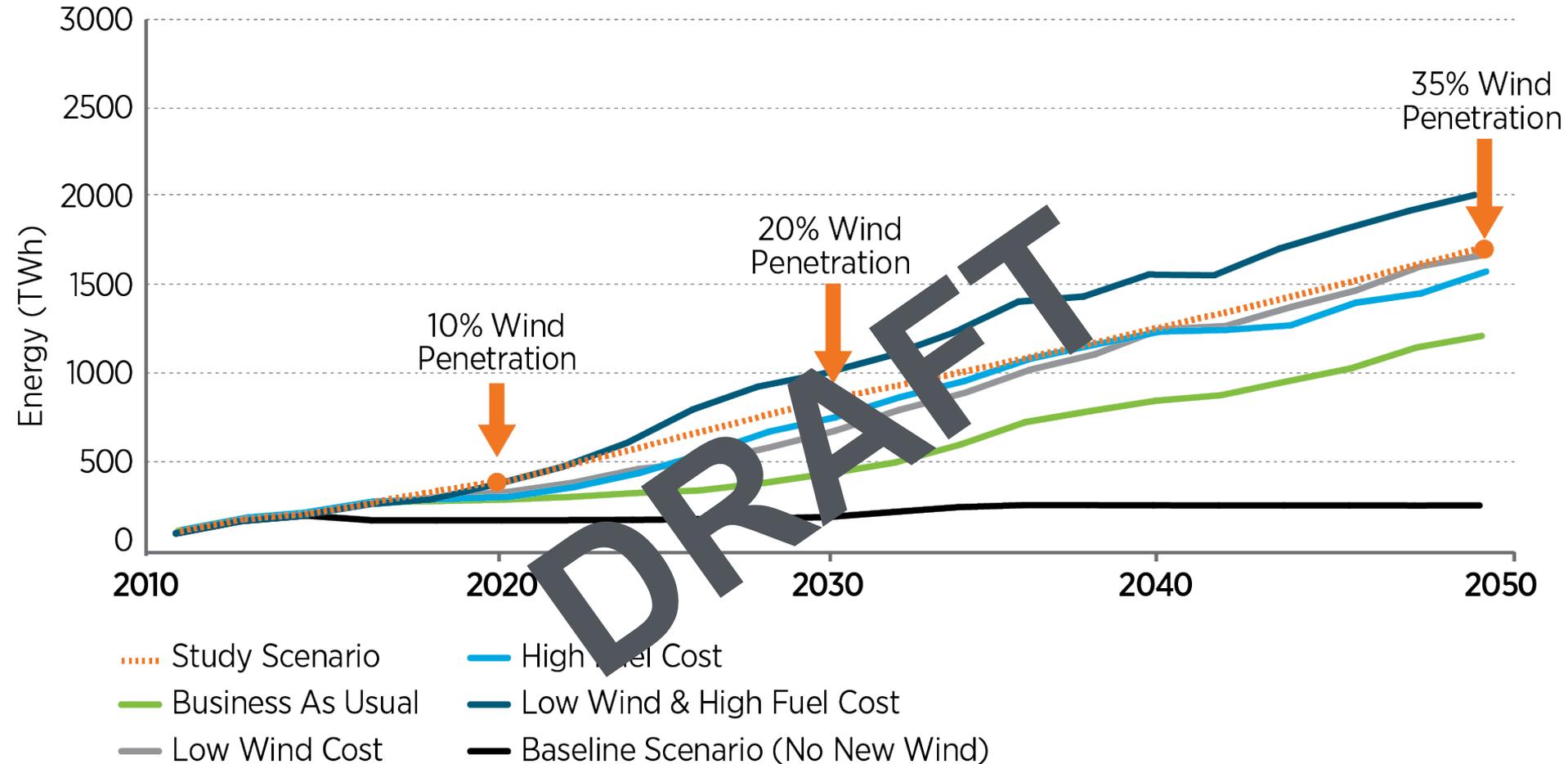
Accomplishments Since 2008

In several aspects, the wind industry has made progress since 2008 exceeding expectations from the DOE Report, *20% Wind Energy by 2030*

| | 2008 Actuals | 2013 Projections from the 2008 Report, <i>20% Wind Energy by 2030</i> | 2013 Actuals |
|---|--|---|---|
| Cumulative installed wind capacity (GW) |  25 |  48 |  61 |
| States with utility-scale wind deployment |  29 |  35 |  39 |
| Costs (2013\$/MWh) |  71 |  66 |  45 |

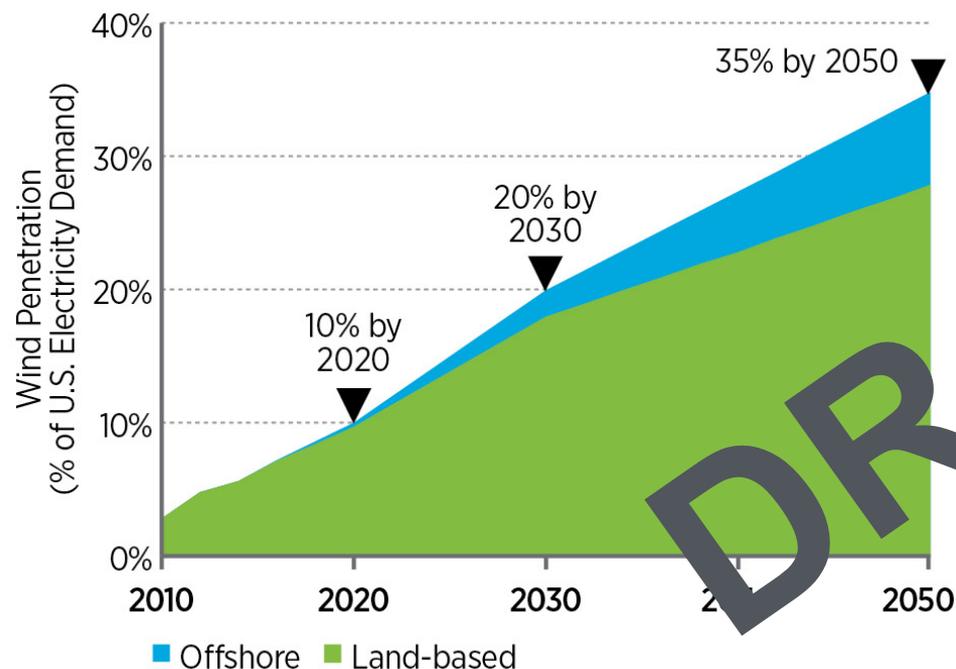
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Evaluating Future Wind Trajectories



The *Study Scenario* represents an aggressive yet credible path forward for wind energy in the U.S.

The *Study Scenario* consists of 10% wind by 2020, 20% by 2030, and 35% by 2050 wind generation compared against a *Baseline Scenario*.

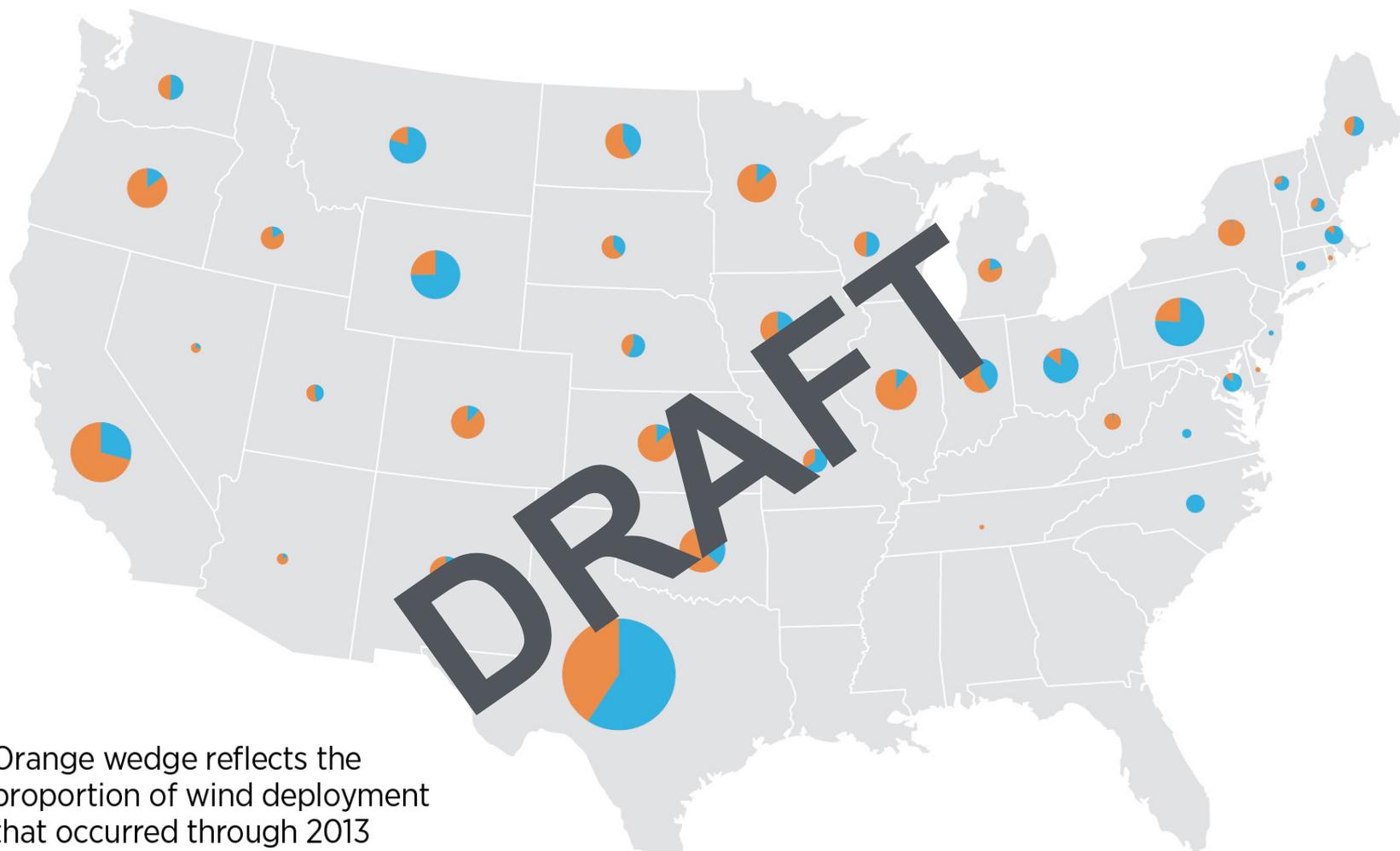


| | | Cumulative Wind Capacity (GW) | | | |
|-----------------------------|--------------|-------------------------------|------------|------------|------------|
| Wind Power Technology | | 2013 | 2020 | 2030 | 2050 |
| Baseline Scenario | Land-based | 61 | | | |
| Study Scenario Central Case | Land-based | 61 | 110 | 200 | 320 |
| | Offshore | 0 | 3 | 20 | 85 |
| | Total | 61 | 113 | 220 | 405 |

The *Baseline Scenario* serves as a reference; allowing true sensitivity comparison and total cost and benefit calculations

Deployment in 2020: 113 GW Total

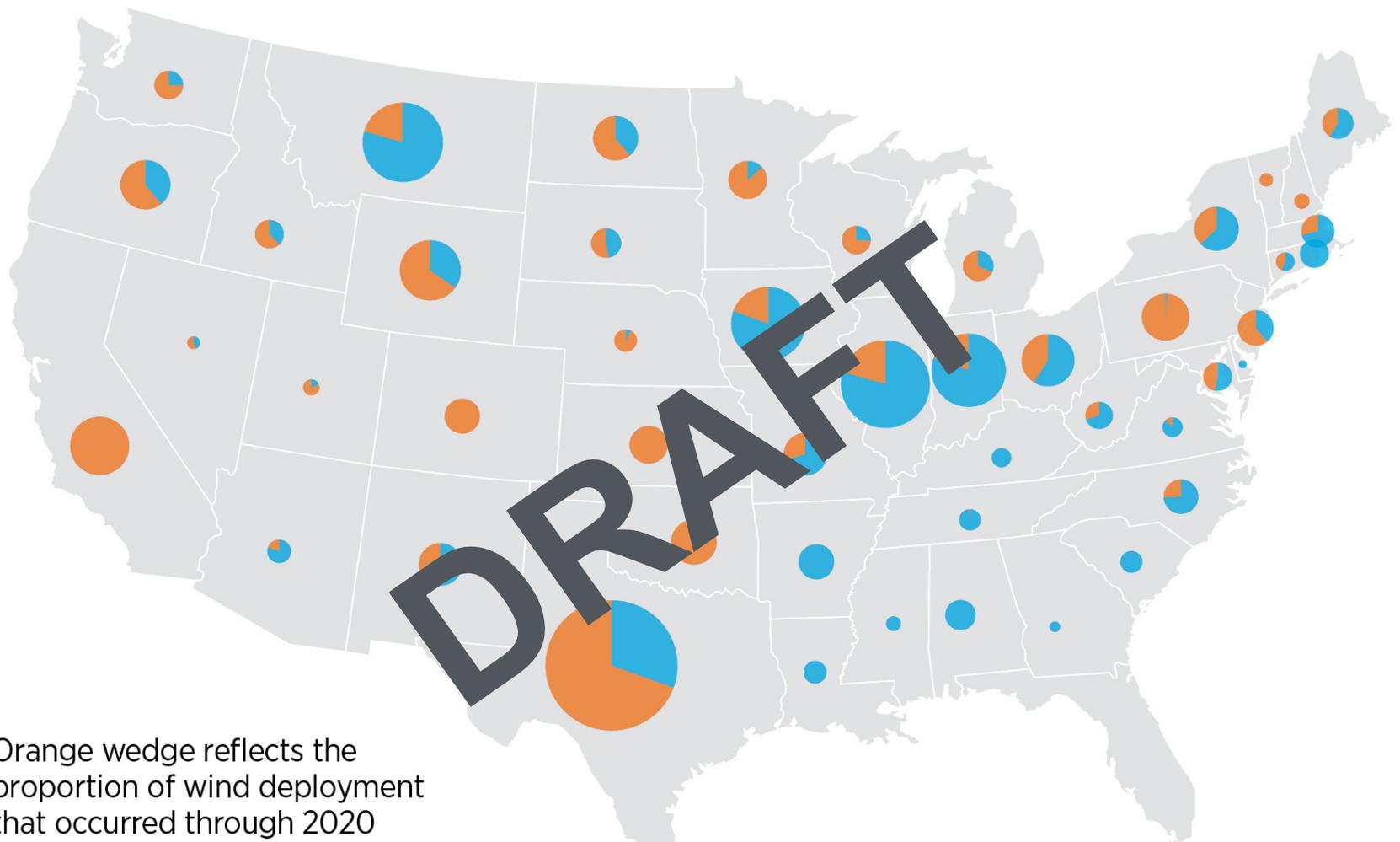
(Land and Offshore)



- Orange wedge reflects the proportion of wind deployment that occurred through 2013
- Circle size reflects the state's wind capacity by year-end 2020

| # of States | Land-base | Offshore | Total |
|---------------|-----------|----------|-------|
| 43 (25 > 1GW) | 110GW | 3GW | 113GW |

Deployment in 2030: 5 States with 10+ GW (Land and Offshore)

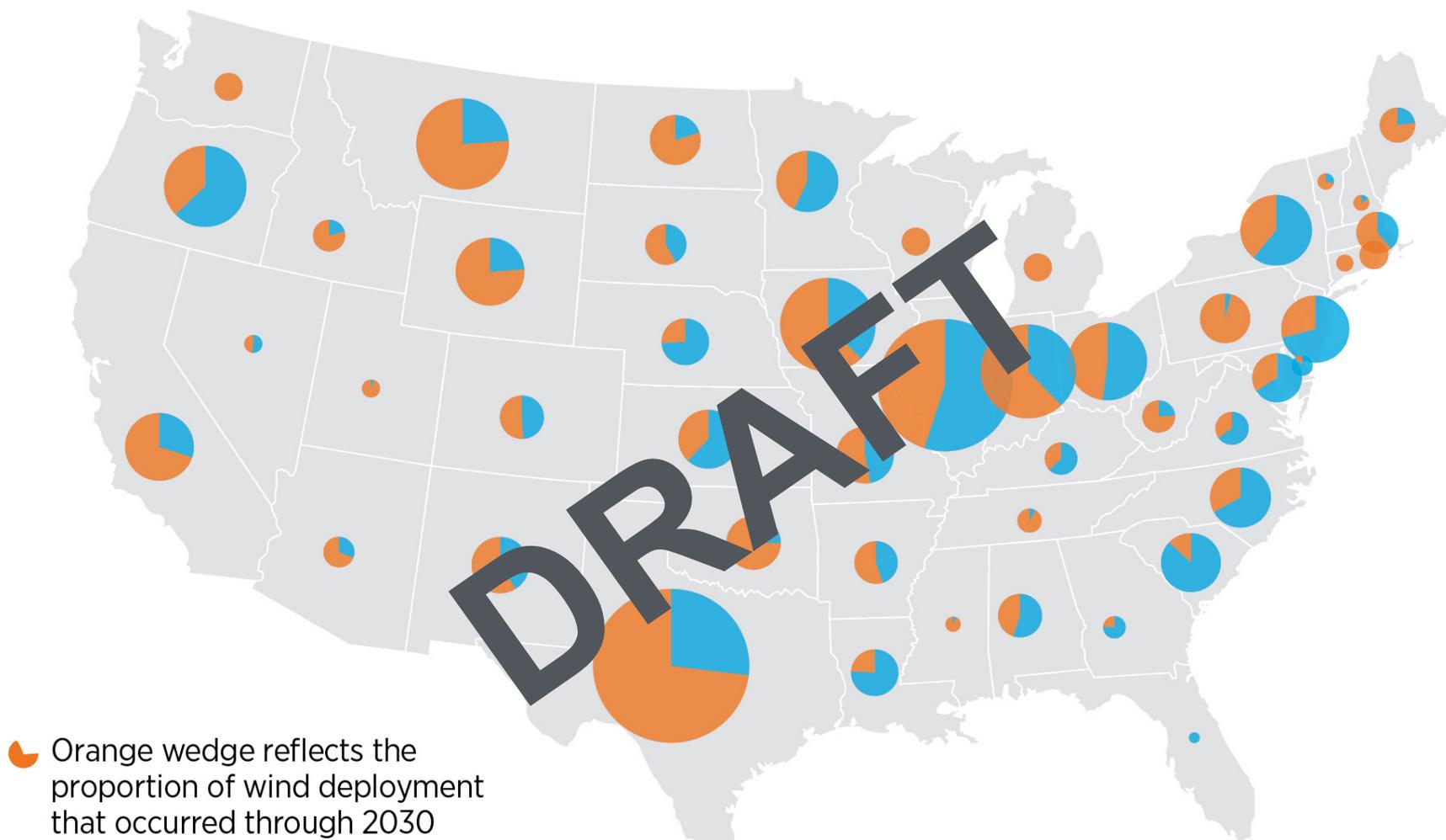


- Orange wedge reflects the proportion of wind deployment that occurred through 2020
- Circle size reflects the state's wind capacity by year-end 2030

| # of States | Land-base | Offshore | Total |
|---------------|-----------|----------|--------------|
| 49 (5 > 10GW) | 200GW | 20GW | 220GW |

Deployment in 2050: *Wind in 50 States*

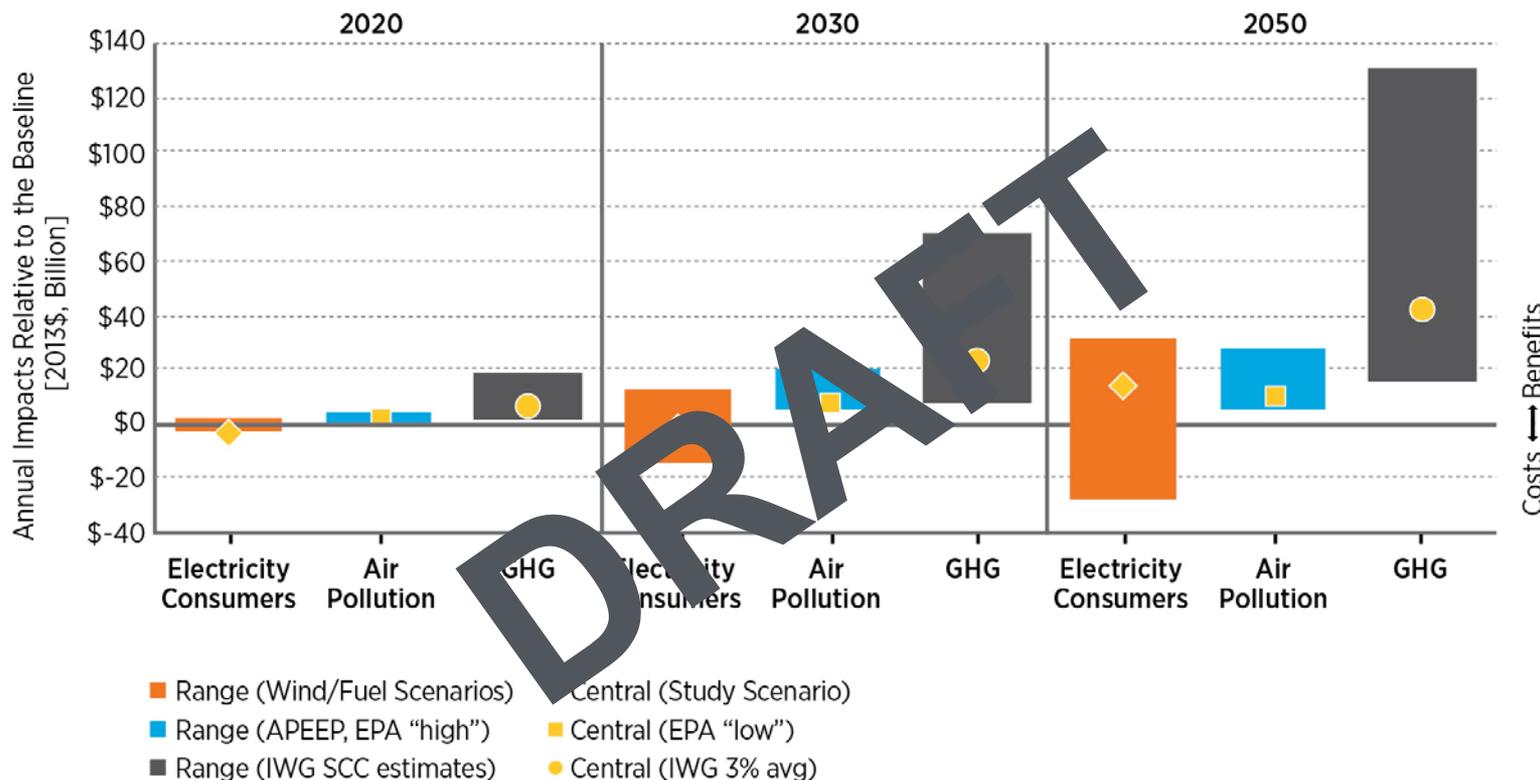
(Land and Offshore)



- Orange wedge reflects the proportion of wind deployment that occurred through 2030
- Circle size reflects the state's wind capacity by year-end 2050

| # of States | Land-base | Offshore | Total |
|----------------|-----------|----------|--------------|
| 50 (10 > 10GW) | 320GW | 85GW | 405GW |

Reduced GHG, SO₂, NO_x, and fine particulate matter emissions provide benefits in addition to the long term savings in electricity rates achieved in the *Study Scenario*.



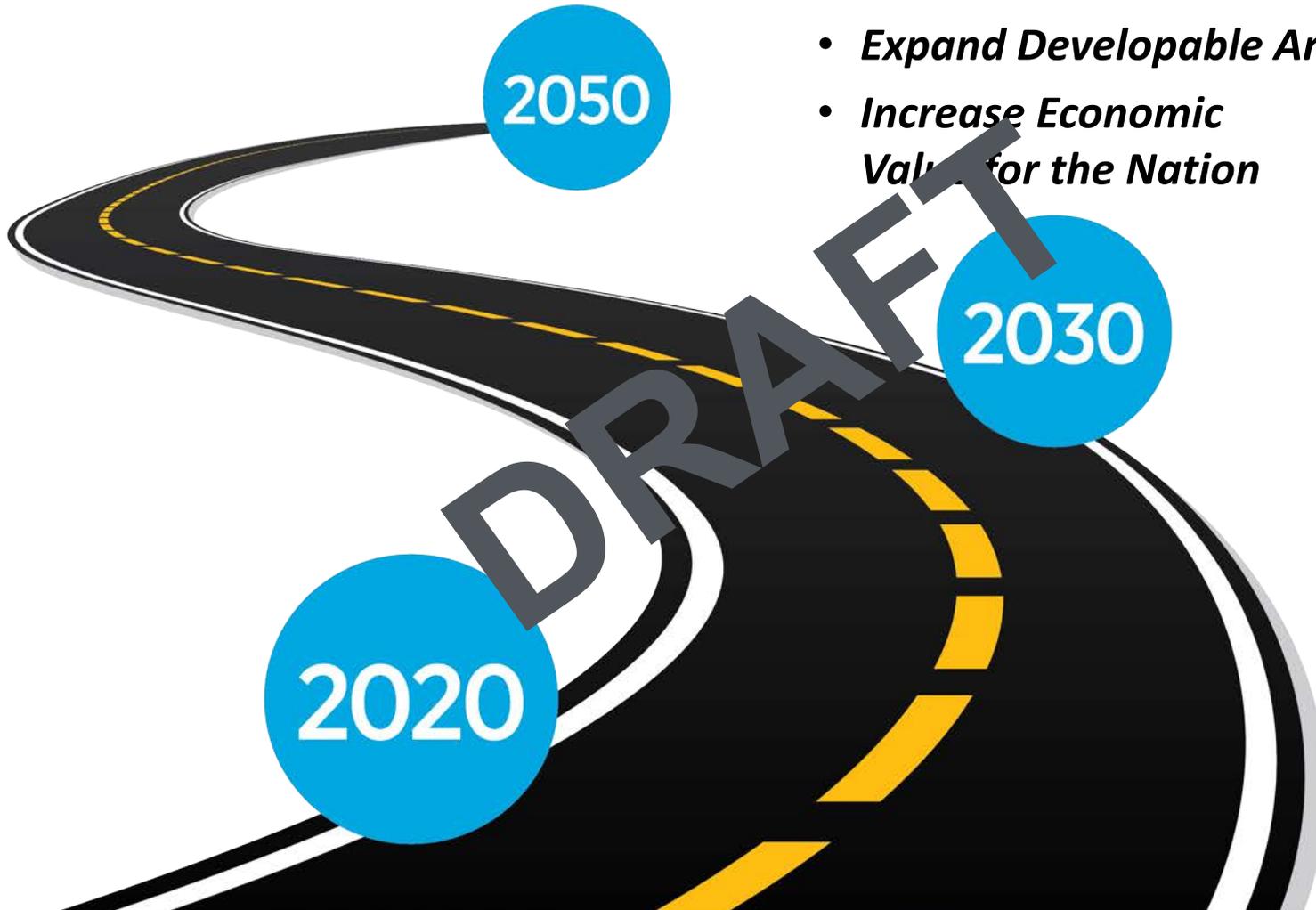
The *Study Scenario* results in increases in electricity cost in the near-and mid-term (<1%), but in the long term electricity costs savings are achieved

Benefits and Other Impacts of the *Study Scenario* by 2050

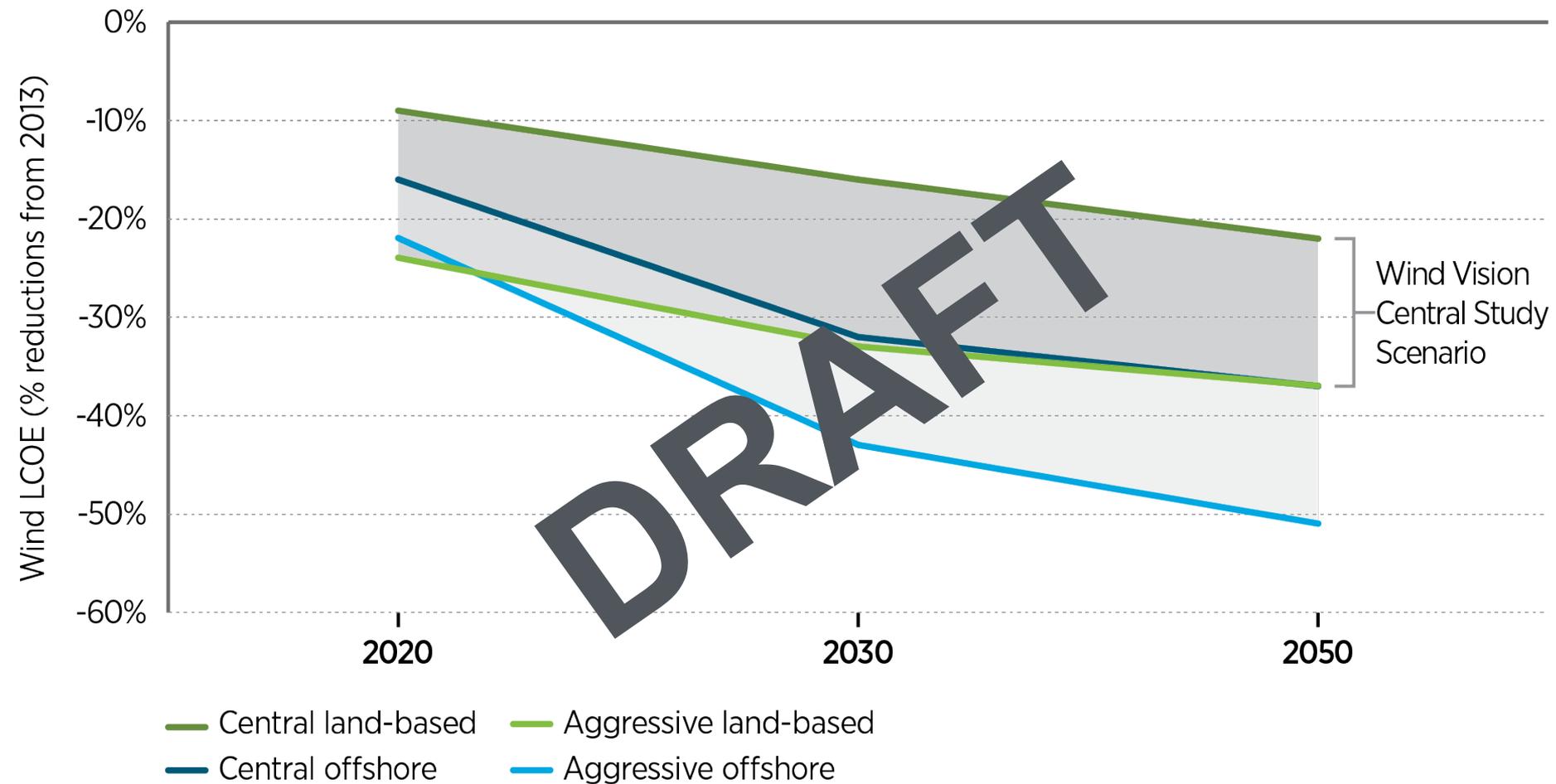
| System Costs | | Benefits | | |
|---|---|--|--|---|
|  | |  |  |  |
| \$149 Billion [3%] savings | | \$400 Billion Savings | 108 Billion savings; 22,000 lives saved | 260 Billion gallons [23%] less consumption |
| Additional Impacts | | | | |
|  |  |  |  |  |
| Energy Diversity | Jobs | Local Revenues | Land Use | Public Acceptance and Wildlife |
| Electricity prices 20% less sensitive | ~ 600,000 gross jobs | \$1.0 Billion/year in land leases \$3.2 Billion/year in tax payments | 1.5% area of contiguous US Transformed land area = < 1/3 area occupied by U.S. golf courses today | Responsible siting; Optimizing coexistence |

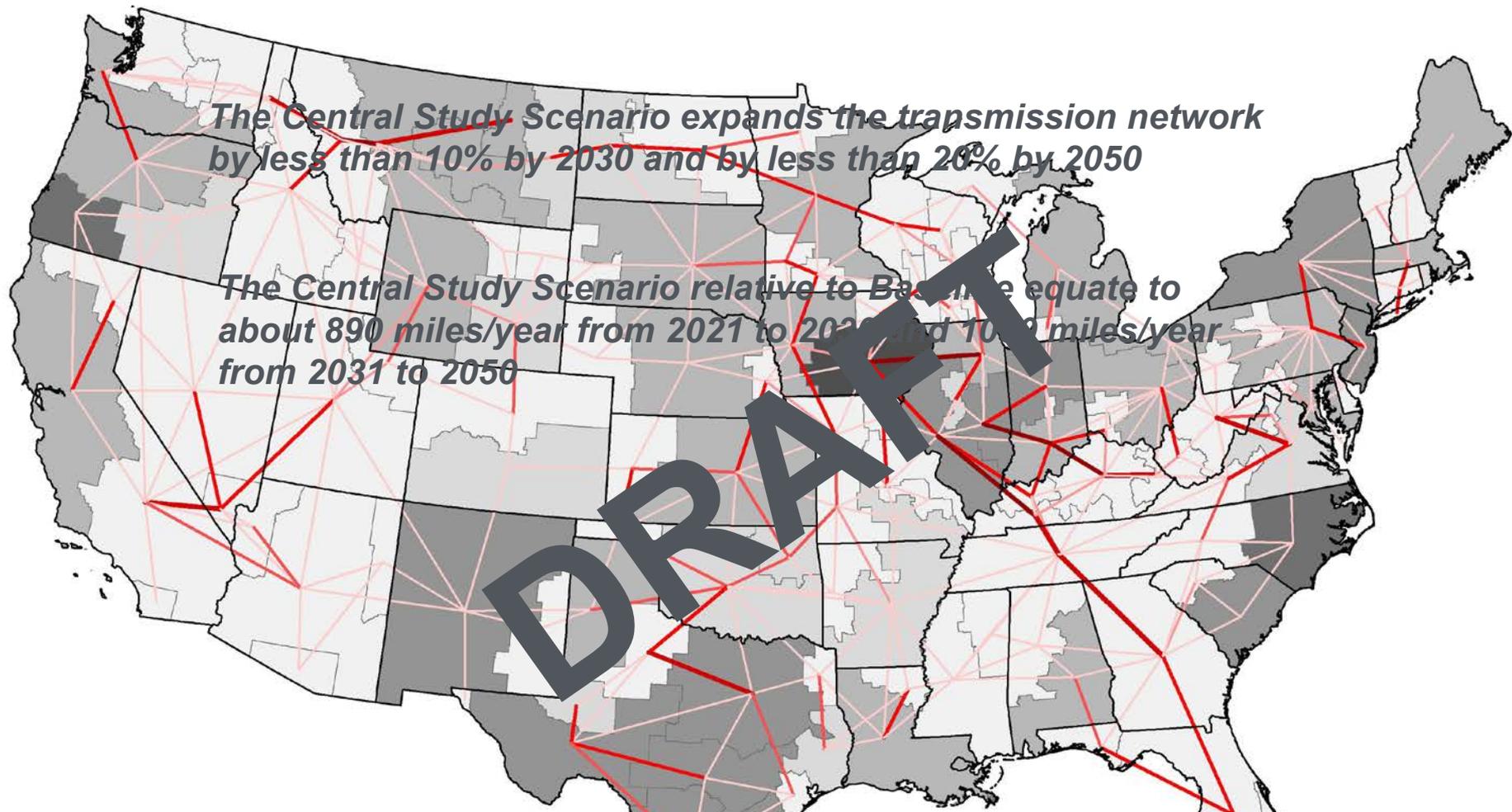
Key Themes

- *Reduced Wind Costs*
- *Expand Developable Areas*
- *Increase Economic Value for the Nation*



Roadmap: *Reducing Wind Costs*





Since 1991, an average of 865 miles per year of new transmission have been added and 21,800 circuit miles are planned with in-service dates before 2023

- **Wind Matters!**
- To date, the accomplishments and contributions are significant
 - 61 GW, 50,000+ jobs, manufacturing in 43 states
 - CO₂ reduced by 115M metric tons – equivalent to emission from 270M barrels of oil
 - Water consumption reduced by 36.1B gallons
- The *Wind Study Scenario* represents an aggressive yet credible scenario, documenting an array of costs and benefits
- To capture these benefits, the industry must come together and course the new agenda
- The *Wind Vision* project represents a true commitment by the industry, and the Department could have not have done it without you!

For more information
wind.energy.gov/windvision

