



Carbon Free Hydrogen from Nuclear Power
Energy & Utilities Finance & Policy Committee

3/3/2022

Xcel Energy

Serving eight states

3.7 million electricity customers

2.1 million natural gas customers

Nationally recognized leader:

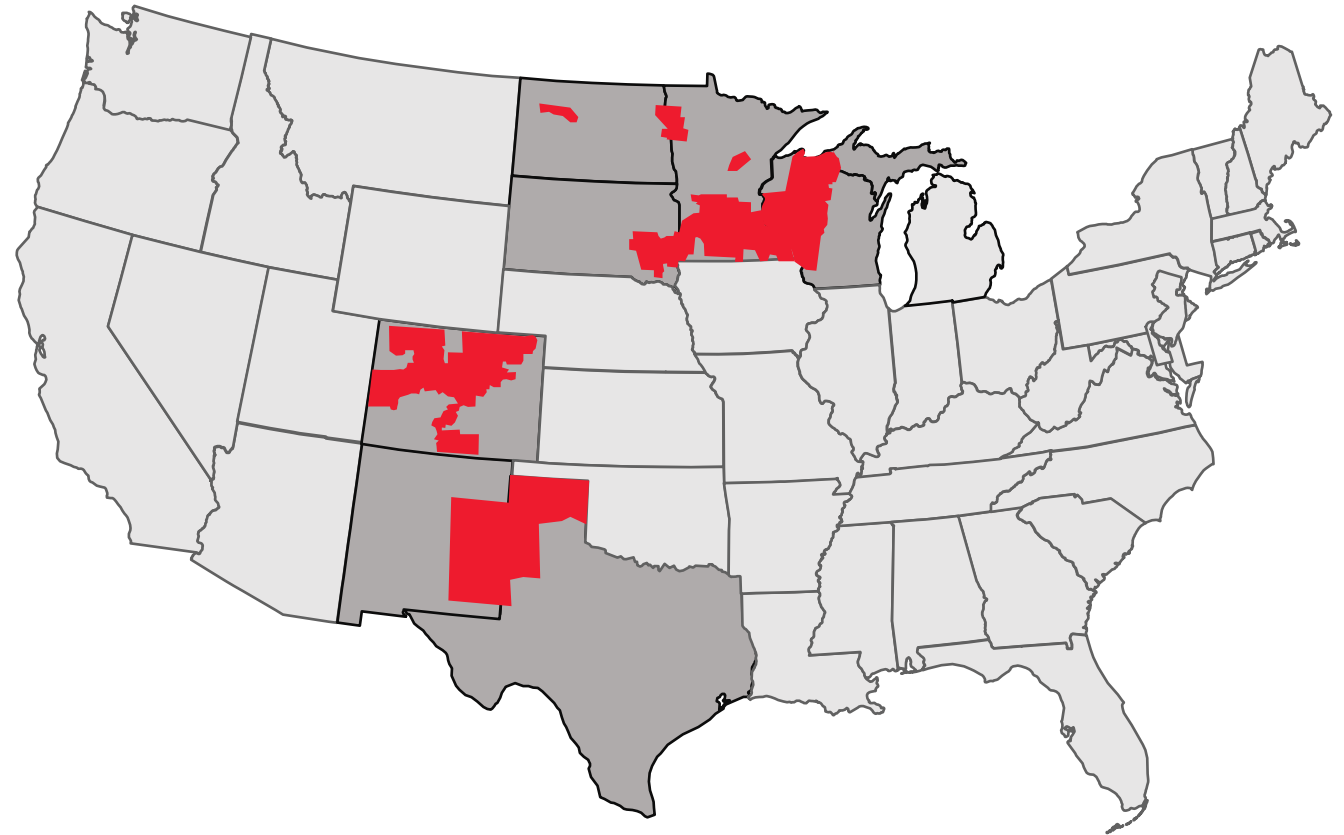
Wind energy

Energy efficiency

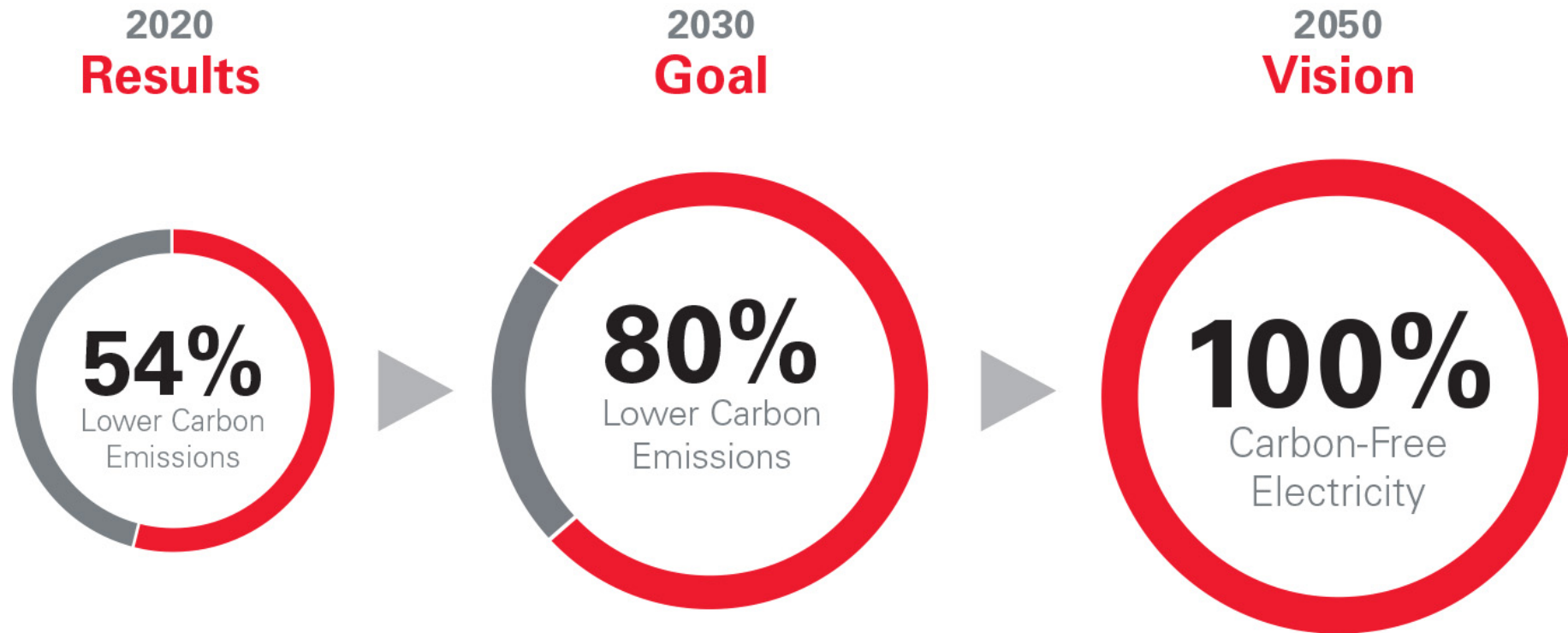
Carbon emissions reductions

Storm restoration

Innovative technology



A Bold Vision for a Carbon-free Future



(Upper Midwest carbon reductions)

2020 National Climate Leadership Award for Organizational Leadership

EXPLORING HYDROGEN FOR ITS MANY USES

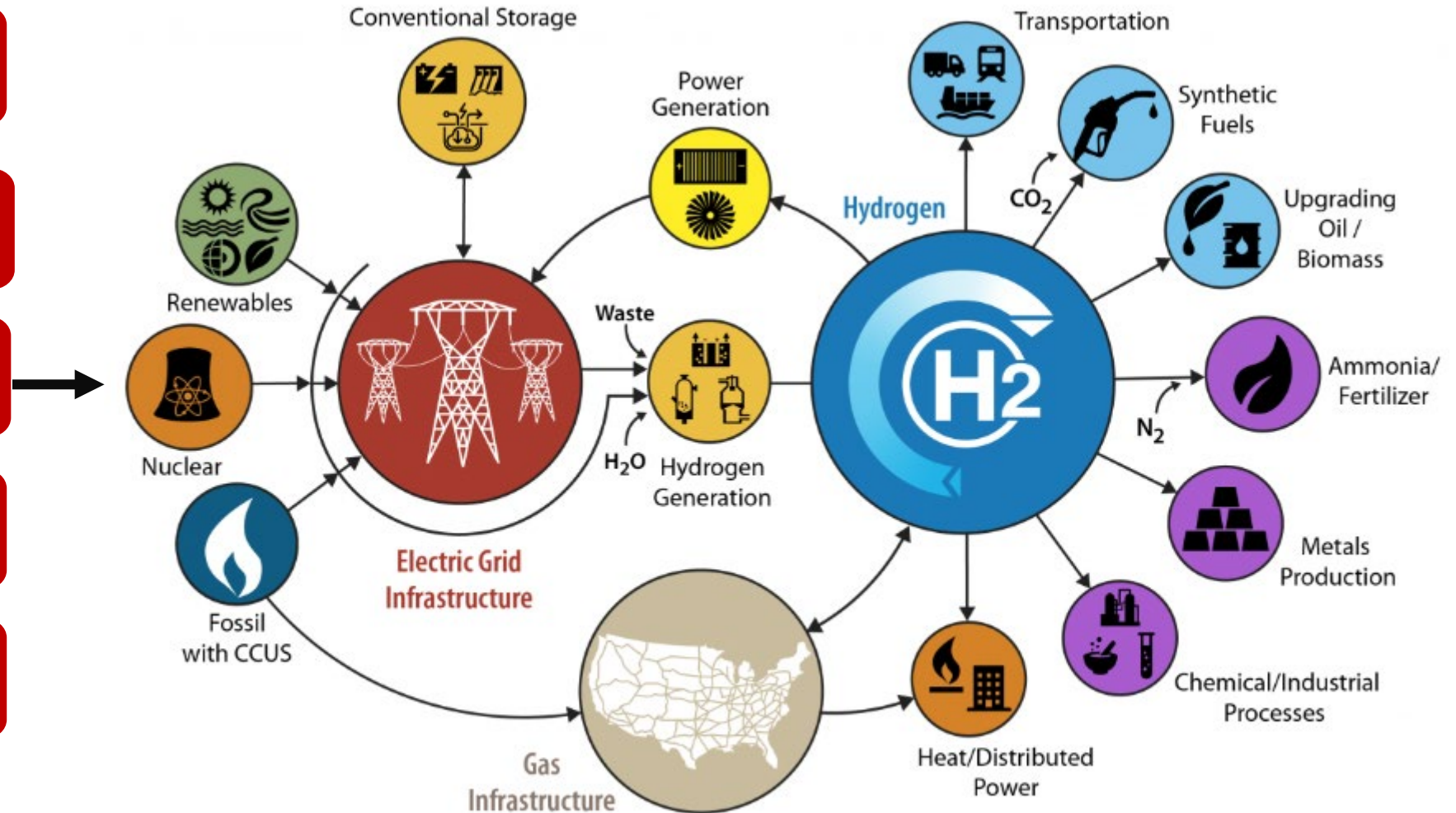
Carbon Capture

Adv. Renewables

Hydrogen

Advanced Nuclear

Advanced Storage



NUCLEAR CONSORTIUM: WORKING FOR THE FUTURE OF NUCLEAR



Phased Approach - DOE Funded Scope

Phase 1

Install Low Temperature Electrolysis (LTE) Skid [*Energy Harbor*]

Technical and Economic Assessments (due mid-2021) [*Xcel Energy & APS*]

Phase 2

Installation of High Temperature Steam Electrolysis (HTSE) Skid [*Xcel Energy*]

Complete design work for Reversible HTSE skid [*APS*]

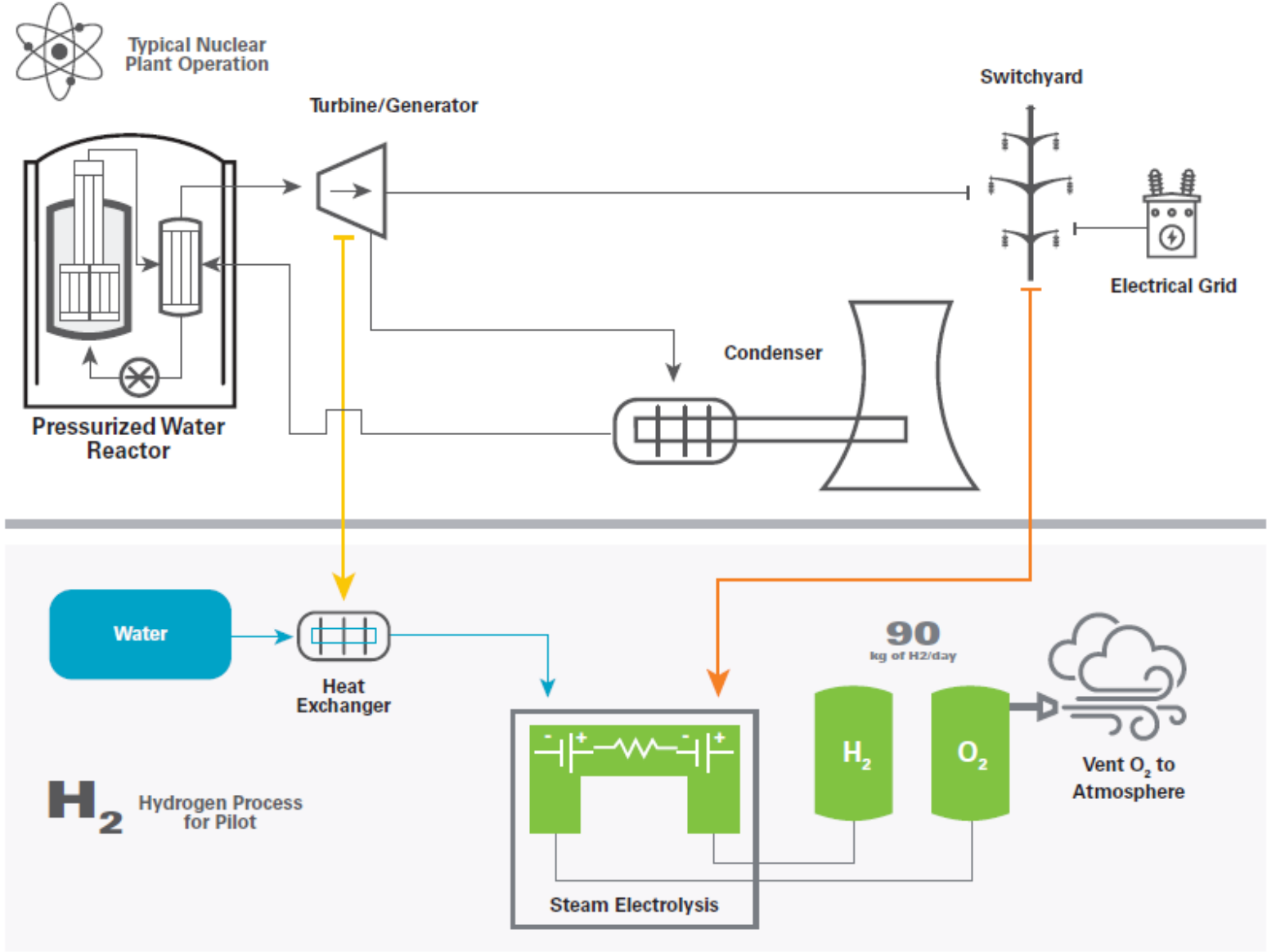
Phase 3

Large scale LTE, mix H2 with natural gas in turbine, syngas pilot [*APS*]

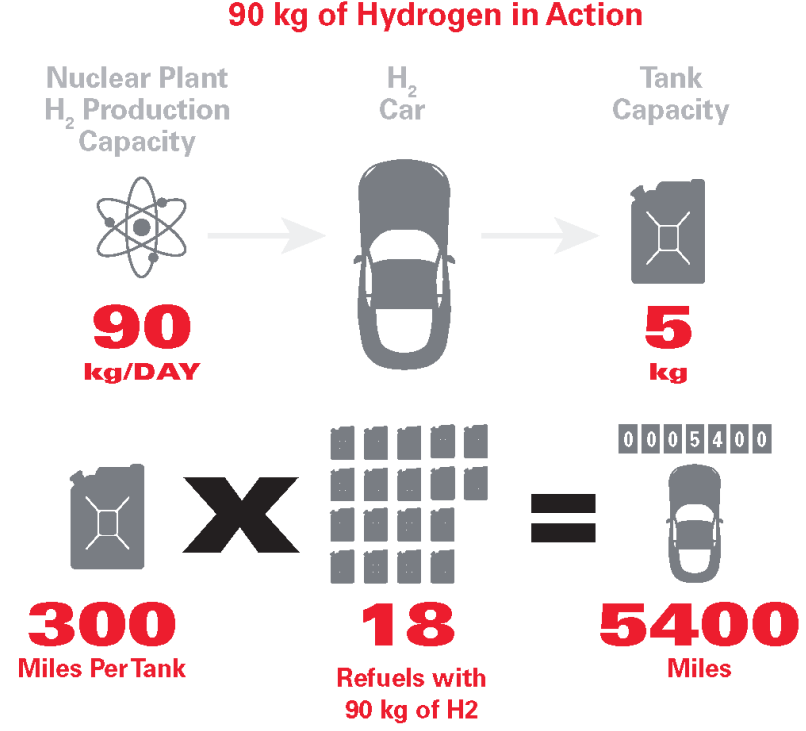
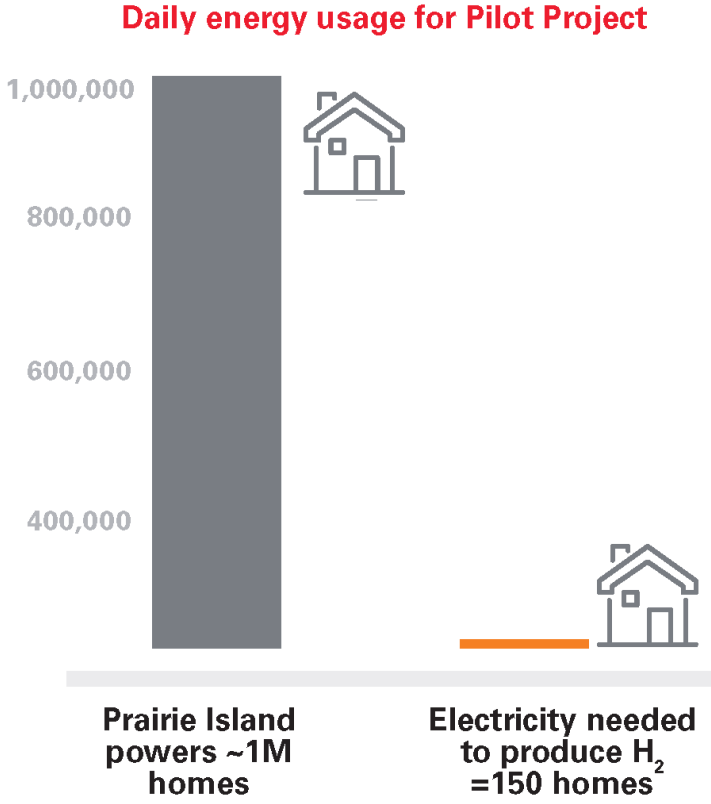
Phase 4 – Future

Expansions on Phase 2 work, hydrogen storage, industrial integration, other. [*TBD*]

Producing Hydrogen From Carbon-free Nuclear Energy



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Pilot Project Schedule

- Project must be completed within 2 years of funding receipt
- All dates pending receipt of funding

