

REINVENTING FIRE®

BOLD BUSINESS SOLUTIONS FOR THE NEW ENERGY ERA

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Principal

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Oil

Natural gas

Coal

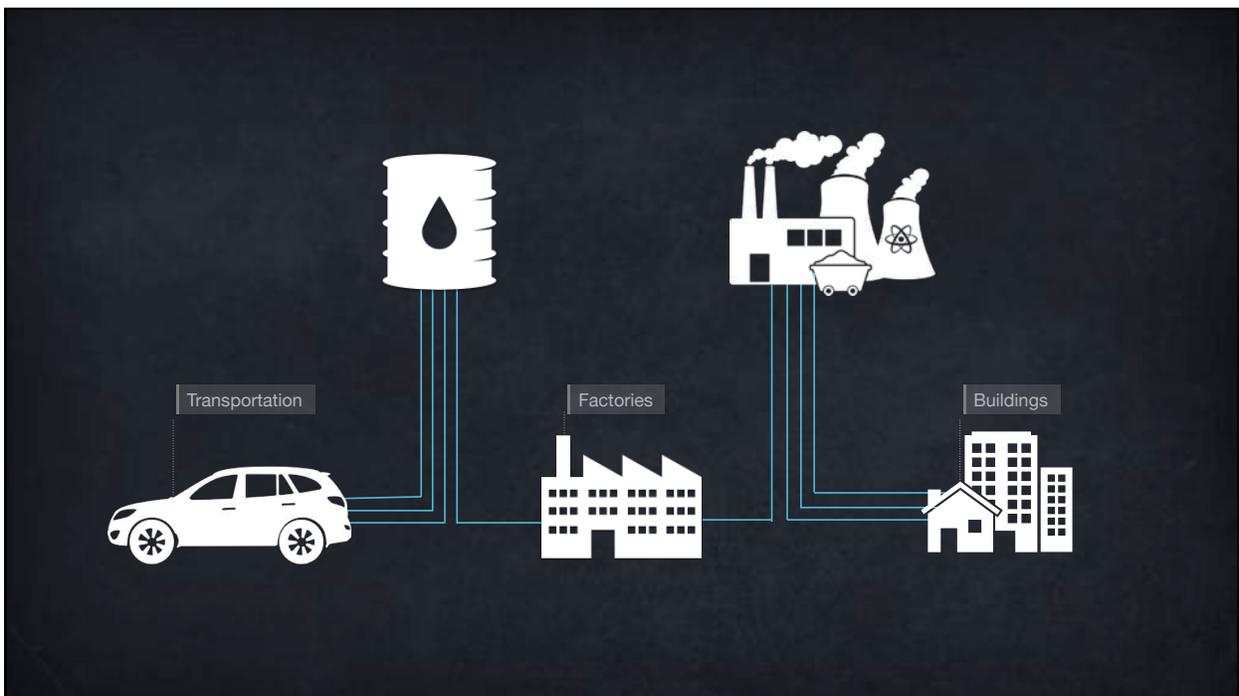
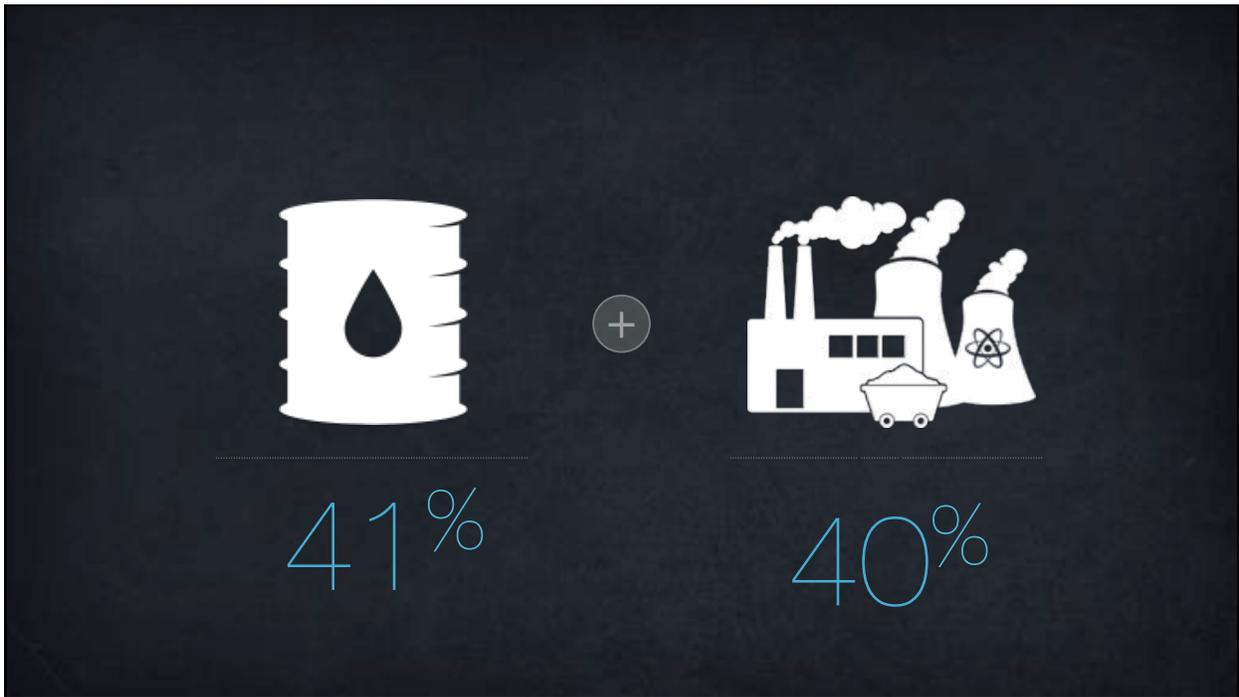
Nuclear

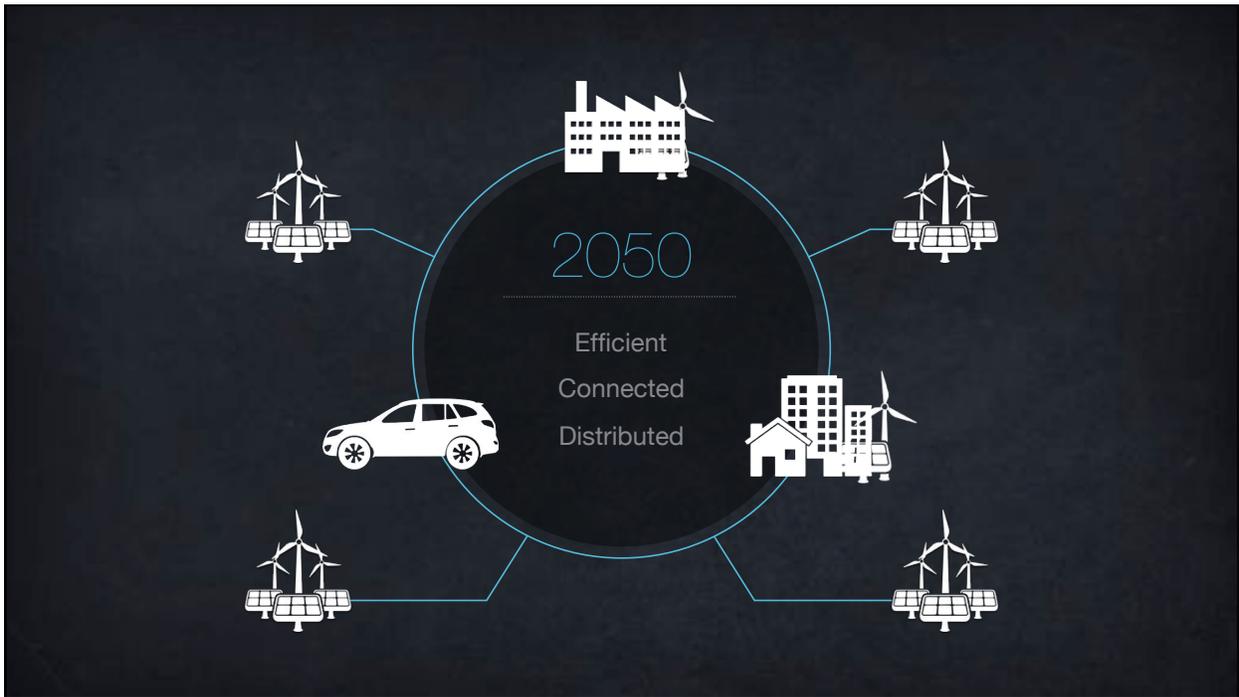
Biomass

Hydroelectricity

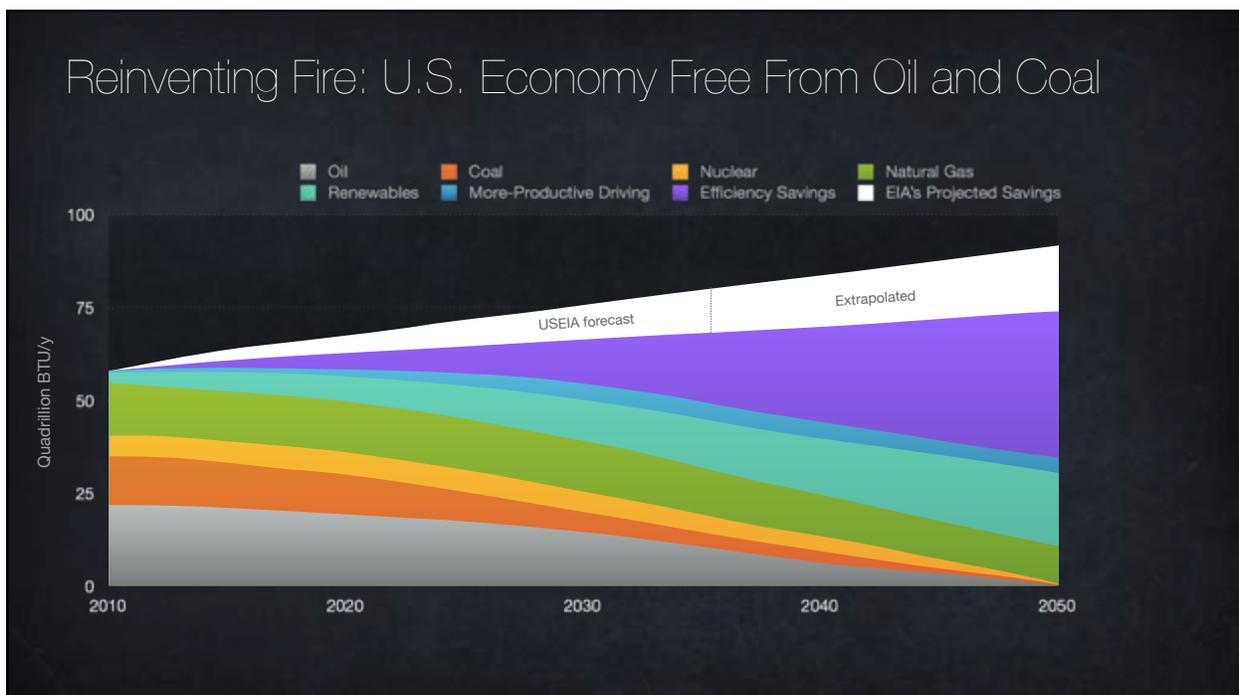
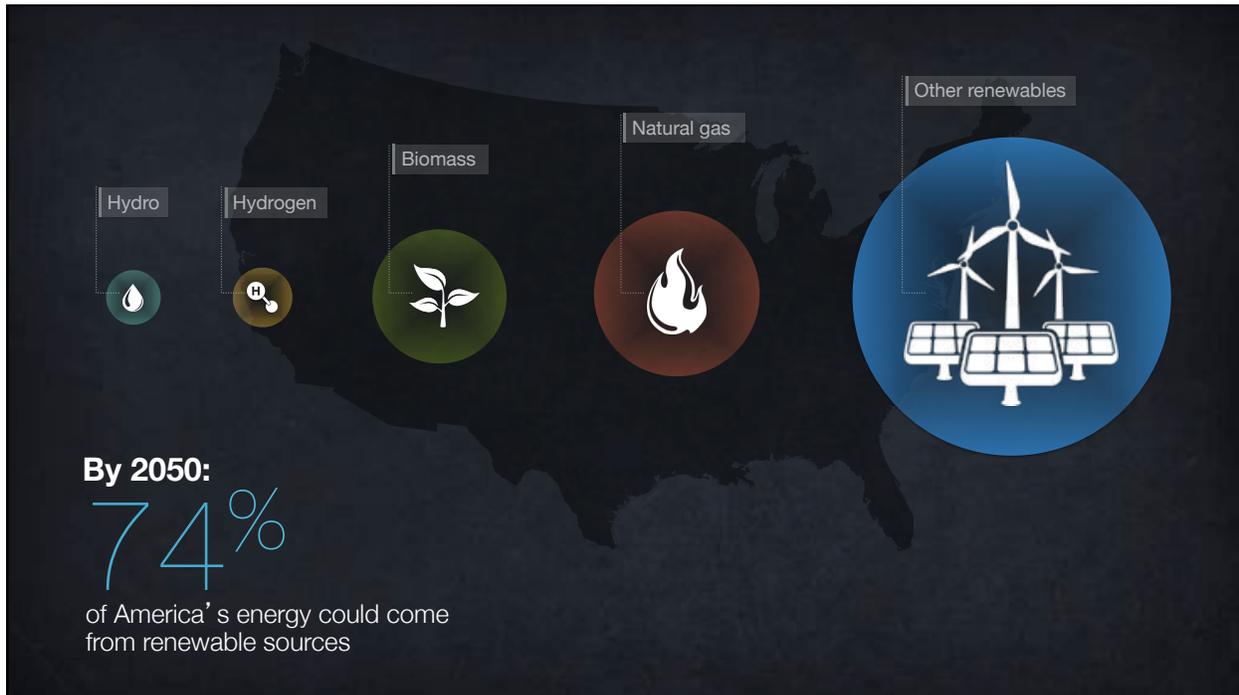
Other renewables

TODAY:
90%
of America's energy comes from non-renewable sources











Rocky Mountain Institute's Implementation Initiatives



Next-Generation Electricity



RetroFit



Superefficient Affordable Housing



Transformational Trucking



10xE: Factor Ten Engineering



Project Get Ready

The United States' 120 Million Buildings Use...

>\$400b

annual energy bill

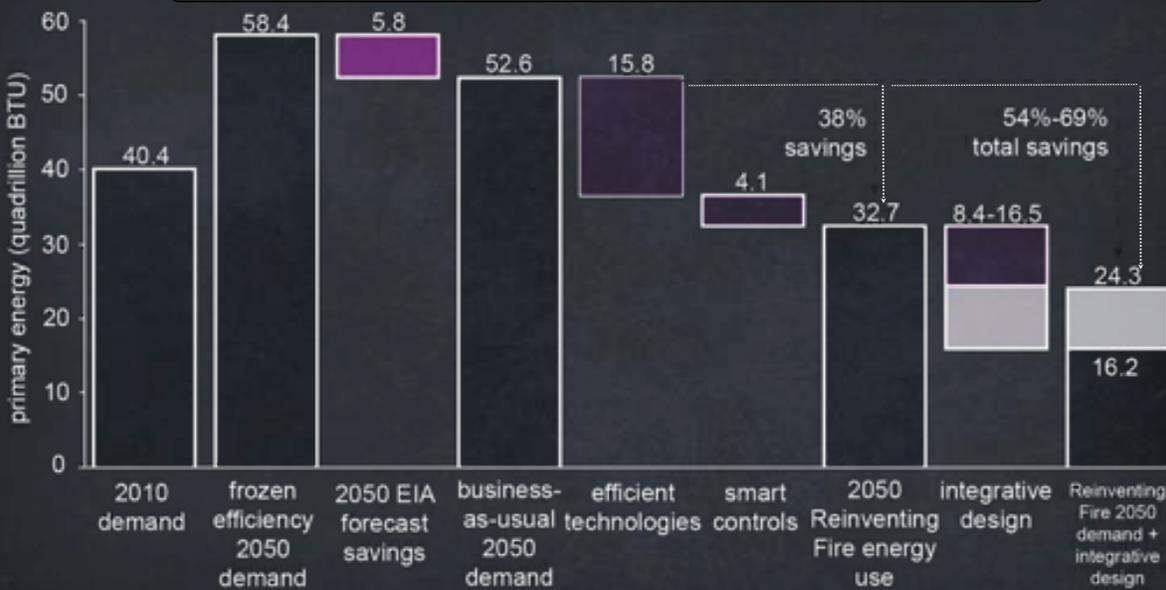
72%

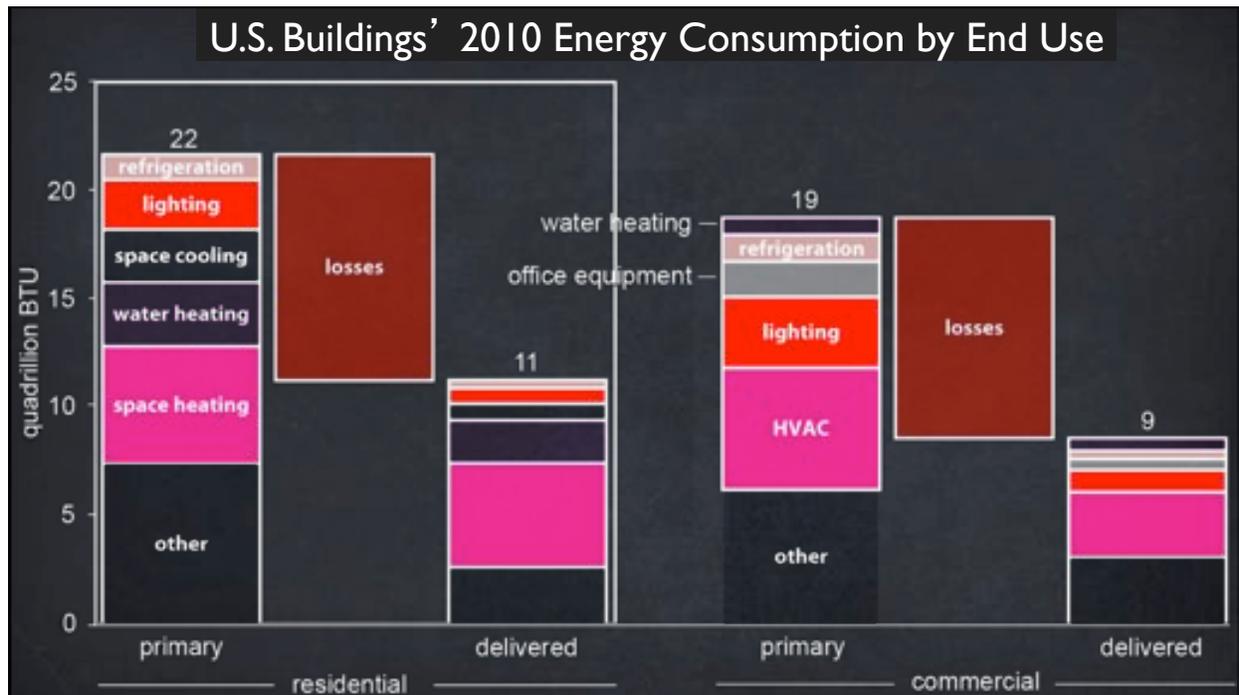
of U.S. electricity

47%

of U.S. natural gas used directly (not in power plants)

U.S. Buildings' energy saving potential, 2010-2050





Retrofitted Low-Friction Piping Layout



New Commercial Buildings, Far More Efficient at no Extra Cost



Lewis and Clark State Office Building
Jefferson City, MO
55–60% saving
normal capex



Fossil Ridge High School
Fort Collins, CO
60% saving
normal capex



Ctr. for Health & Healing, Oregon
Health & Science U., Portland
61% saving, –\$1.6M capex
\$29/sf added value



An Exceptionally Deep Retrofit:
GSA's Byron Rogers Building (Denver)



70% expected saving
(90 → 27 kBTU_{site}/sf-y),
meeting federal
economic guidelines

Caltech Linde + Robinson Laboratory
Built 1932, Retrofitted 2009–10



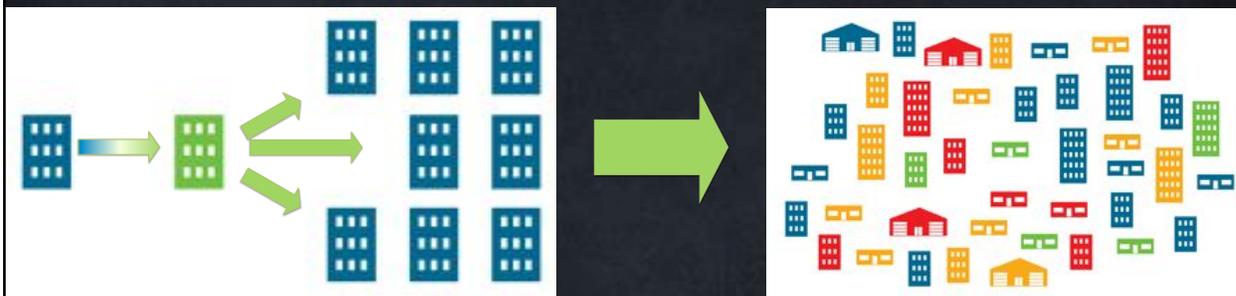
Photos from <http://lindecenter.caltech.edu/building/history>

A deep retrofit of The National Snow and Ice Data Center



Cooling energy use reduced by 95% with a 3 year payback

Portfolio Rollout strategy



How we can scale building efficiency investment? -Vendors (supply), Owners (demand) and financiers

- Start measuring and counting non-energy benefits.
- Help identify preferred and prequalified resources.
- Educate appraisers to value efficiency and agents to sell it.
- Plan investment timing to coincide with other “triggers”
- Leverage the similarities in the building stock to gain scale through repetition (portfolios, campuses).
- Enable transparent access to energy use data
- Create owner demand through better valuation
- Adopt and promote project structures that align incentives around efficiency.
- Use financing mechanisms to offer no-up-front-cost solutions.
- Programs need to make investing in energy efficiency as simple and “usable” as possible

