

CHALLENGES AND OPPORTUNITIES ON THE PATH TO A NEW ENERGY FUTURE

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To hurry the future, we must change the rules.

"Good rules align the interests of individuals and corporations with public interest, so that business can profit in ways that also make society richer and safer."

- Timothy Wirth, Vinod Khosla, John Podesta

To hurry the future ...

Transportation

- The long-term trend to electricity is inevitable.
- Transitioning the U.S. fleet of light-duty vehicles to plug-in hybrids could reduce gasoline use by 40-55% by 2050.
- A fleet of hybrids is a fleet of batteries that can store renewable energy as part of a smart electric grid, providing thousands of megawatts of reserve power.
- In 2011, ethanol production helped decrease oil import dependence to 45%, reducing imported oil needs by 485 million barrels and cutting costs by ~50 cents/gallon.
- Next: Methanol from cheap natural gas?

... change the rules

Transportation

- Increase fuel economy standards.
- Prepare the grid for electric vehicle integration.
- Make the refueling infrastructure more flexible for alternative fuels.
- Accelerate research and development of advanced biofuels.



To hurry the future ...

Electricity

- A smarter grid could predict and avoid system outages automatically, and limit the scope of outages when they do occur.
- Consumers should be able to cut their electricity bills by choosing not to use power at peak times when it is most expensive.
- Higher rates can lead to lower costs if utilities invest in energy efficiency and demand response programs.

... change the rules

Electricity

- Deploy new smart grid technologies that will enable consumers to enjoy more reliable, efficient, and secure power.
- Allow consumers to schedule their electricity use around the real price of electricity.
- Enact a Clean Energy Standard to substitute efficiency, gas, and renewable energy for coal.



To hurry the future ...

Energy efficiency

- The United States should lead the world by doubling the improvement in energy productivity within five years.
- Upgrade the energy performance of 40% of America's buildings by 2020, creating 625,000 jobs and saving consumers \$32-64 billion per year in the process.
- Atlanta: Better Buildings Challenge



... change the rules

Energy efficiency

- Decouple utilities' revenues from electricity sales.
- Promote new business models for electric utilities that incentivize energy efficiency investments.
- Develop new financing mechanisms to help building owners pay for energy upgrades – e.g., PACE bonds.
- Address supply and demand on equal footing.
- Encourage state and federal energy efficiency resource standards.

To hurry the future ...

Clean and renewable energy

- 300,000 megawatts of wind power projects are waiting in line to connect to the transmission grid.
- Coal will continue to lose market share to natural gas and renewable energy as new EPA regulations take effect.
- We now have more than a 100-year supply of domestic natural gas, an estimated 30 years of which can be produced for less than \$4 per thousand cubic feet.

"The time has come for the natural gas industry to get organized, take the gloves off, and get thoroughly engaged in helping our country advance rapidly toward a low-carbon economy."

- Timothy Wirth

... change the rules

Clean and renewable energy

- Expand and upgrade the transmission grid to connect remote renewable resources to markets.
- Remove barriers to the expansion of distributed generation.
- Strengthen clean and renewable energy standards and tax incentives.
- Ensure the development of abundant new shale gas reserves is done in an environmentally sound manner.
- Provide clear regulatory direction on air quality to utilities.
- Continue to research carbon capture and sequestration.

Change the rules.
Hurry the future!

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