

Paying for energy efficiency projects



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New Mexico

“Clean Energy State”

- 20 % electricity from renewables by 2020
- First state renewable energy transmission authority in the U.S.
- Commuter rail to serve half the state’s people
- Aggressive clean energy industry incentives
- Western Climate Initiative seeks agreement among Western states and provinces in the United States, Canada and Mexico on a market-based cap-and-trade aimed at reducing greenhouse gas emissions fifteen percent below 2005 levels by 2020; and
- New Mexico’s clean cars program conforms with California’s fuel economy standards.

Proposed state, national and international initiatives

- Emphasize low- and zero-petroleum plug in vehicles;
- Push fuel economy standards for conventionally fueled vehicles to 50 miles per gallon (21 km per liter) by 2020;
- Sharply advance the most energy-efficient renewable fuels as well as plug-in hybrid technologies to power not only cars but trains, planes, ships, and heavy trucks;
- Emplace smart growth and transit options to create more energy efficient and livable communities;
- Diversify our electrical sector;
- Create a national energy innovation trust fund; and
- Return to the international negotiating table as a responsible and leading nation and supporting mandatory limits on global warming pollution.

The Task: cut energy use 20% by 2020

- Governor Richardson issued in November 2007 an energy efficiency executive order that requires a ten percent energy reduction in 2005 per capita levels by 2012 and twenty percent by 2020. The State of New Mexico has also produced a climate action plan that quantifies potential reductions in greenhouse gas emissions and measures cost effectiveness of a range of policies. Meeting these carbon and energy reduction targets require bold, aggressive measures to be adopted soon. Given a range of policy alternatives, New Mexico communities can choose options best suited to their local circumstances.
- The New Mexico Energy Conservation and Management Division contracted with the Southwest Energy Efficiency Project, or SWEEP, a Colorado-based think tank, to report on a strategy on how to meet the twenty percent goal. While this paper addresses ten similar policy options, SWEEP has reported in with 24 options that together are up to the task at hand. A draft of its report is on our web site:
www.cleanenergynm.org

Cut growth in driving

- ✓ **Promote energy and location efficient neighborhood development: integrate the principles of smart growth, urbanism, and green building into neighborhood design standards, as measured by a development's compact design, proximity to transit, mixed use, mixed housing type, and pedestrian- and bicycle- friendliness.**
- ✓ **Direct and coordinate state spending to communities that adopt land use and transportation practices that contribute to VMT performance standards. State governments should inventory all available discretionary funds in such areas as housing, economic development, infrastructure, schools transportation, and state facilities, and allocate these funds to communities that adopt best practices in land use planning and regulation that meet performance standards related to climate and VMT reduction goals.**
- ✓ **Reform zoning to incentivize the right things and discourage or prohibit sprawl, and the state should enhance technical assistance to small communities.**

Stimulate utility support for energy efficiency improvements

- free or deeply-discounted electricity savings measures for low-income households,
- rebates for consumers that purchase ENERGY STAR products or undertake home retrofits,
- incentives for high-efficiency evaporative coolers and air conditioners, air conditioner tune-ups, and proper air conditioner sizing and installation,
- audits for and rebates to businesses that upgrade the efficiency of their heating, cooling, and lighting equipment as well as their building envelope,
- technical and financial assistance to industries;
- grants to pay a portion of the cost for energy savings projects
- training, certification, and outreach to increase the skills of builders

Accelerate combined heat and power systems

- Develop streamlined interconnection procedures, and undertake a review of rates including those for standby or backup power promulgated by both investor and non-investor owned utilities in the state, to make sure they are not discriminatory toward CHP systems. adopt output-based emissions standards based on the model standards developed by the Regulatory Assistance Project. Such standards have been adopted in other western states, including Texas and California.
- Increase use of alternative fuels such as wastewater treatment plant or other digester gases and waste heat-based CHP systems as a way to continue CHP expansion in the face of high natural gas prices. Specific recommendations to achieve this objective include:
 - Provide utility incentives for waste heat-based power generation under utility demand side programs
 - Provide technical assistance to businesses interested in evaluating waste heat and fuel CHP systems as well as with regulatory and permitting issues
 - Encourage CHP as an alternative to biomass-fired heating or stand-alone electric generation

Address the needs of the poor with new energy efficiency

programs

- One avenue to actively pursue is a low-cost, high-volume energy efficiency program for existing homes in low-income neighborhoods. Program activity options include in-home weatherization, reduced costs on materials and training of energy efficiency providers. Low cost programs that can deliver cost effective results include neighborhood energy swings, that is, going door-to-door through low-income neighborhoods.

Design carbon neutrality into neighborhood and building energy codes

- Given how buildings are responsible for such high levels of greenhouse gases, it is vital to build future and renovated homes energy efficiently. Santa Fe's Ed Mazria, founder of Architecture 2030, estimates that 75 percent of all buildings will be either new or renovated by 2030, hence the urgency
- ✓ Assumes that the mandatory statewide code is updated effective in 2010, 2013, 2016 and 2019
- ✓ Assumes around 20% energy savings in 2010, 30% in 2013, 40% in 2016, and 50% in 2019 relative to new homes and commercial buildings meeting the current code
- ✓ Include funding for code training and compliance efforts
- ✓ 7 year payback to comply with new codes

Require energy efficiency updates when homes resell

- Opportunity points for increasing energy efficiency in existing homes in New Mexico are few. Utility and municipal programs, often geared toward low-income residents, cover a small fraction of the market. One avenue that has worked in areas such as water efficiency is to require that existing homes achieve a certain level of energy efficiency before they can be put on the market for sale.
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- A less stringent yet useful alternative is to post in the home sale ads a home energy rating. Typically, in America an existing home's HERS rating is 140, compared to rating of 100 for a new home built to current code. If, as many predict, information on how well a home is insulated and other efficiency measures matters to homebuyers, bringing homes energy efficient will become commonplace.

Compel industry to commit to energy efficiency

- If we captured waste heat we would have 19 percent more energy, equivalent to that which is currently produced by all existing nuclear power plants in the United States. A most promising area to promote, mostly in the industrial sector, is combined heat and power (CHP), or co-generation. CHP is an efficient distributed generation technology that produces both heat and power from a single fuel source
- Barriers must be removed and incentives provided in order to stimulate greater adoption of combined heat and power systems, placed near buildings where the heat and power they produce is needed, rather than transmitting the power over long distances. Needed are appropriate environmental regulations, utility interconnection policies, and utility tariffs; promotion of fuels other than natural gas for fueling CHP systems; and reasonable financial incentives for high performance CHP systems

Cut local government and public school energy use in half by 2012, thence net zero by 2020

- California has set goals of net zero energy homes by 2020 and businesses by 2030. New technologies backed with performance incentives are emerging that can help meet these goals, including frictionless refrigerant compressors; addressable ballasts; dispatchable thermostats; bilevel stairwell lighting control; auto control sash fume hood; high output fluorescents; induction lamps; and automatic demand response. Southern Cal Edison already has 69 energy efficiency programs in place that are worth 9000gwh

Set feebates on cars and homes

- A feebate can be designed to be revenue-neutral, so that the implementing entity incurs no net cost or revenue. Or, to overcome resistance of sellers from changing how they profit from sales (bigger and less efficient has been hugely profitable for both auto dealers and realtors), the program could be modified to put some portion of the feebate in the hands of car dealers, as an incentive for them to sell more fuel economizing models. Several states are currently considering feebates. New Mexico could set up feebates to cover new light duty vehicles (cars and light trucks) sold in the state, setting the fee or rebate on its mileage.
- A home feebate system would send a price signal to homebuyers to more fully account energy costs into the purchase decision. It could be designed so that a residence not exceeding state energy efficiency standards would be assessed a carbon fee, with a rebate going to those who exceed the code by 30 percent

Other measures

- ◉ Clean Car Standards
- ◉ Innovative Electricity Rates
- ◉ Energy Conservation Ordinances for Existing Homes
- ◉ Lamp Efficiency Standards
- ◉ Replacement Tire Efficiency Standards

More measures

- ◉ Decoupling and/or Shareholder Incentives
- ◉ Energy Efficiency in Oil and Gas Sector
- ◉ School Energy Efficiency Education
- ◉ Vehicle Feebates
- ◉ Tax Credits for Efficient New Homes, Commercial Buildings, Cooling Equipment

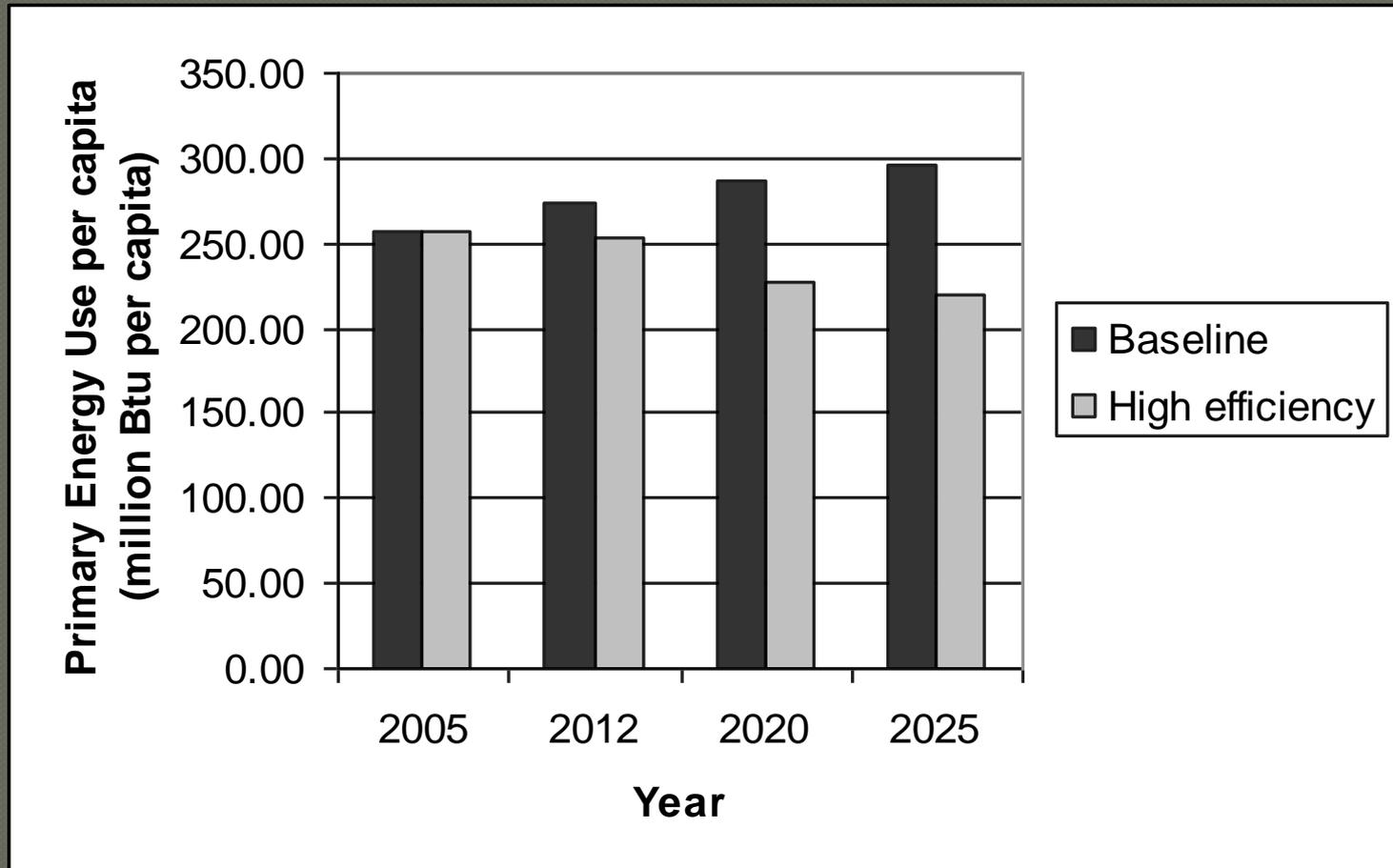
Even more measures

- ◉ Accelerated Retirement Program for Inefficient Vehicles
- ◉ Energy Efficiency Expertise Through Training and Certification
- ◉ Better Enforce Speed Limits
- ◉ Pay-As-You-Drive Insurance
- ◉ Efficient Heavy-Duty Trucks and Goods Movement System

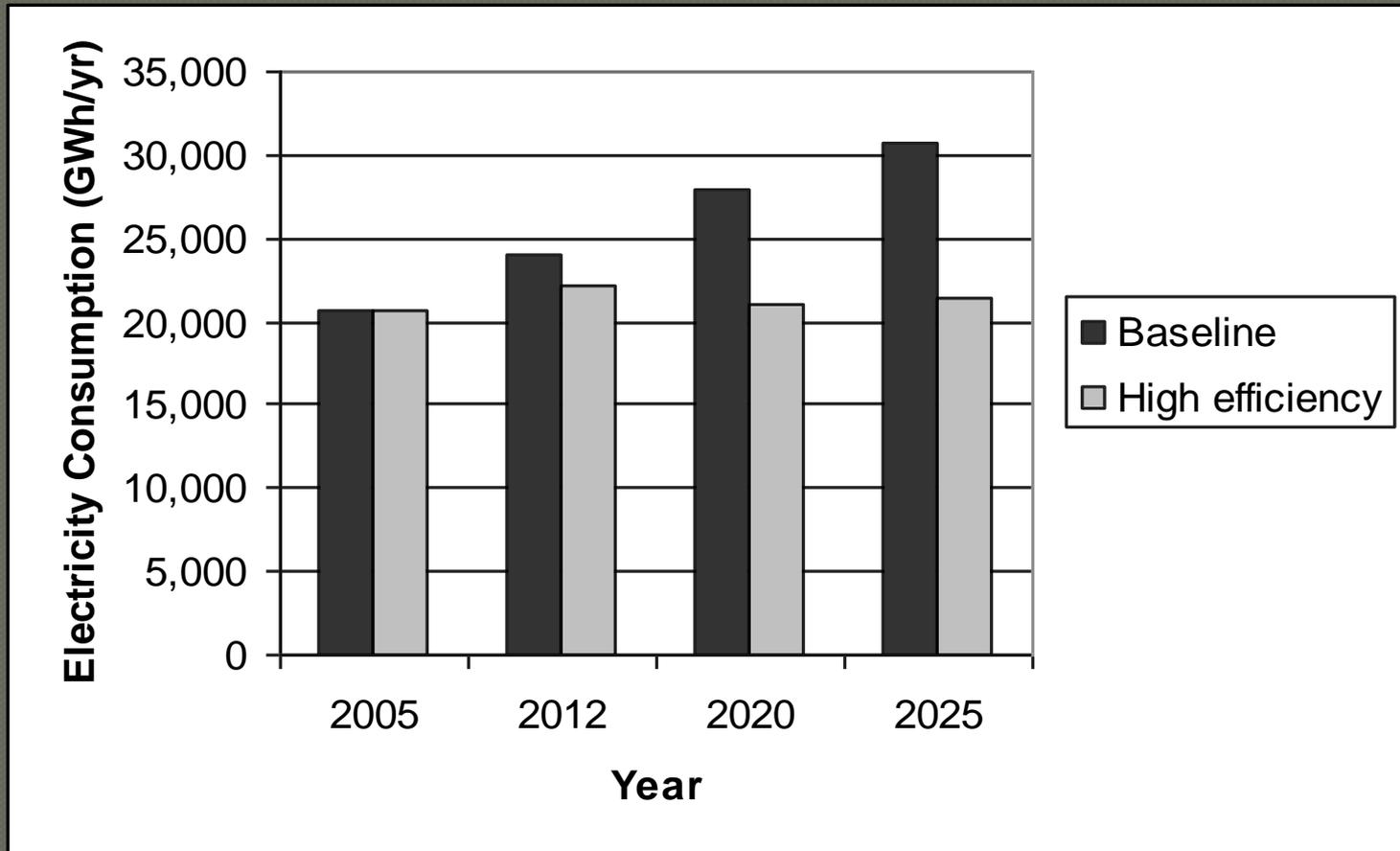
Bottom Line

Primary Energy Consumption or Savings (trillion Btu per year)				
	2005	2012	2020	2025
Baseline Scenario	430.4	489.6	536.8	567.8
High Efficiency Scenario	430.4	450.0	406.3	389.6
Energy use per capita – Baseline Scenario	223.2	231.1	230.5	231.8
Energy use per capita – High Efficiency Scenario	223.2	212.4	174.4	159.0
Savings in High Efficiency Scenario (%)	0.0	8.1	24.3	31.4
Reduction from 2005 level in high efficiency scenario (%)	0.0	4.9	21.9	28.8

Energy use per capita by scenario

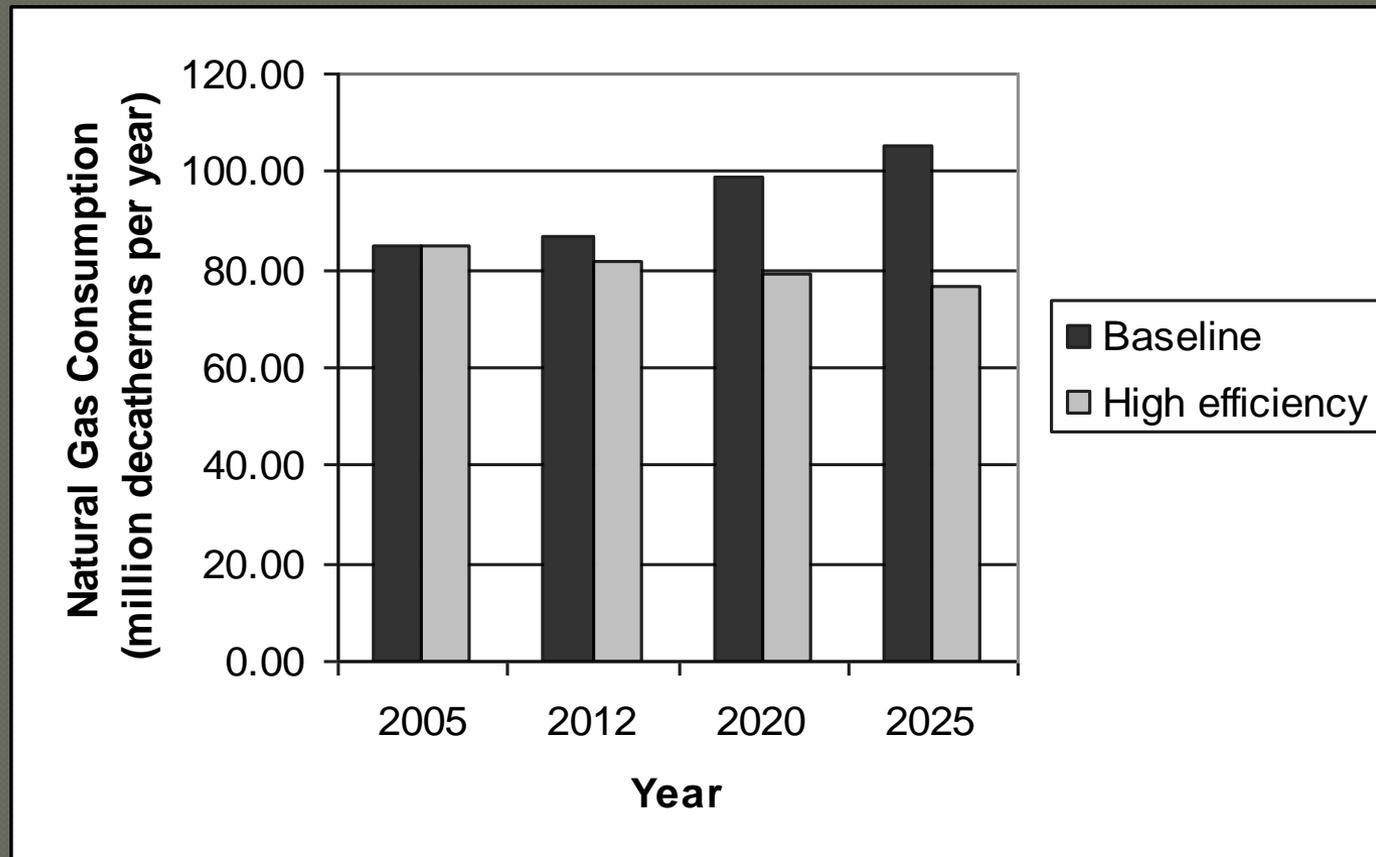


Electricity savings potential



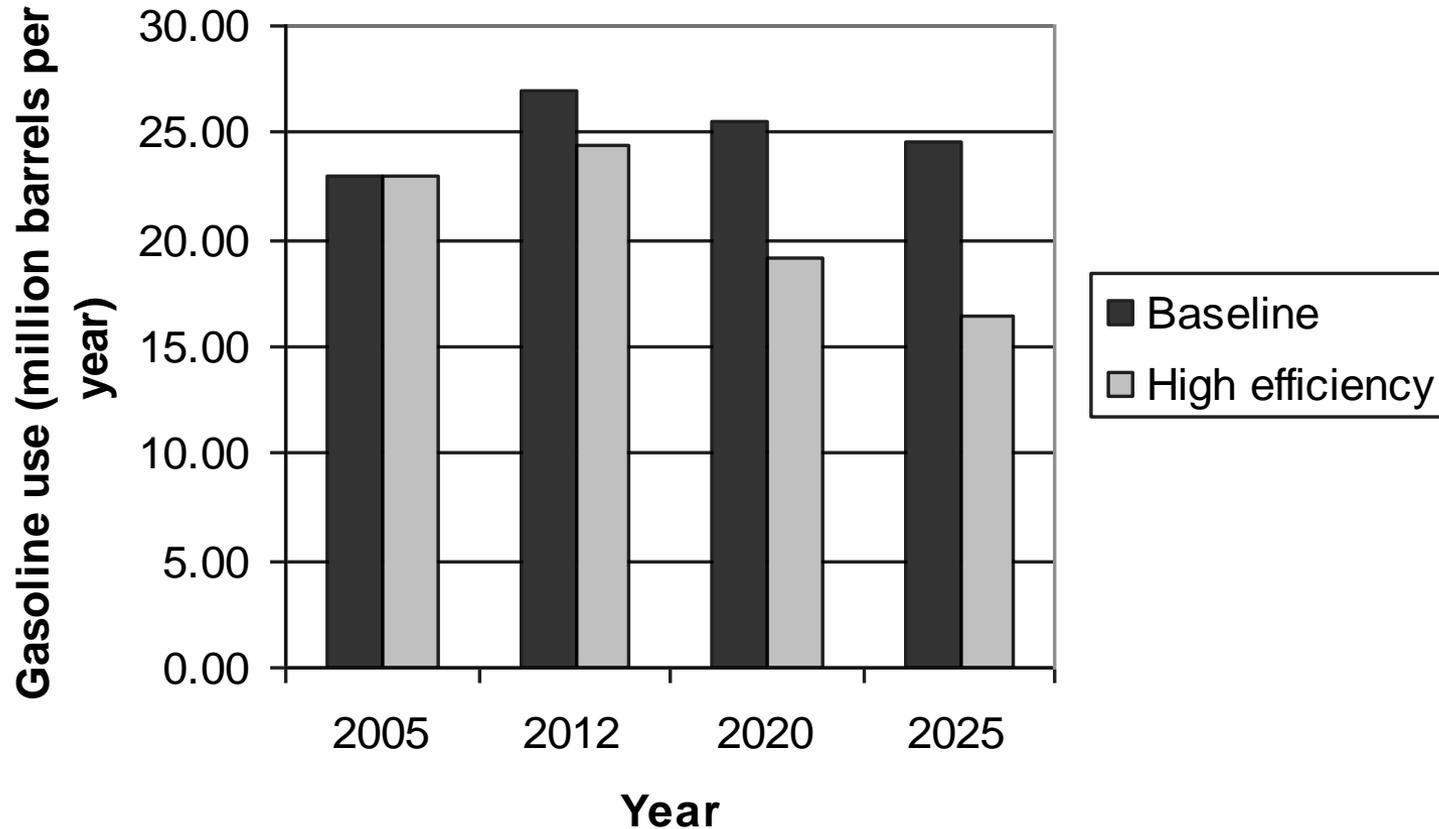
Big ones: expanded electricity DSM programs and lamp efficiency standards

Natural gas savings potential



Big ones: gas utility DSM programs, building energy codes, and the industrial challenge and recognition program

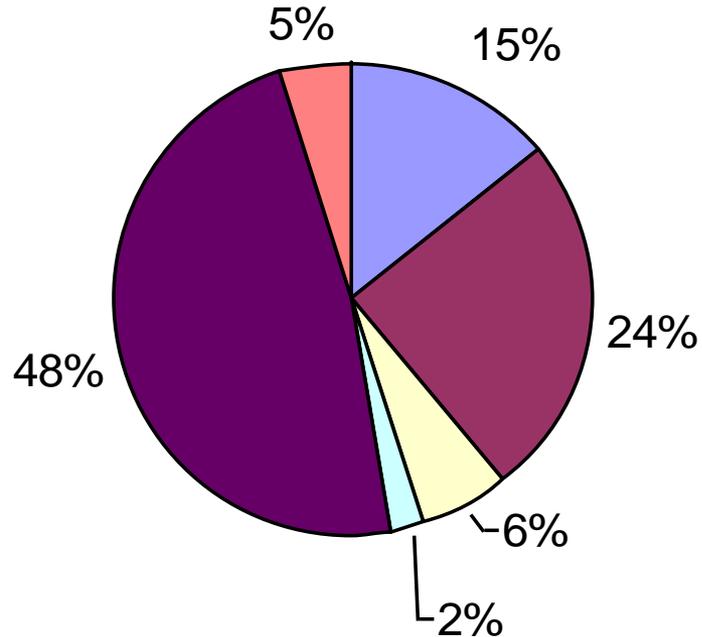
Gasoline savings potential



Big ones: clean car standards and reducing driving

Economic Benefit

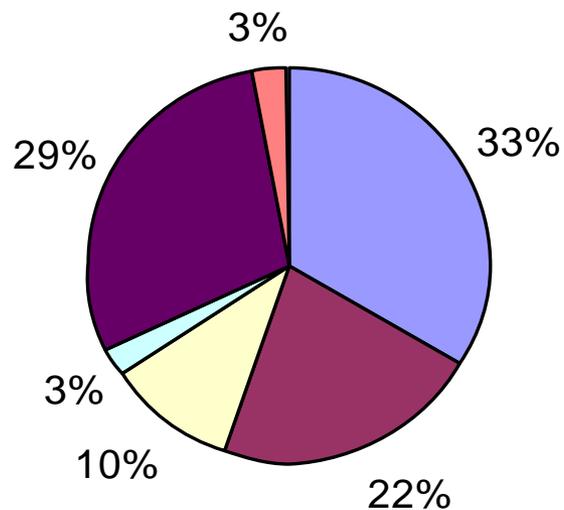
Total Economic Benefit - \$5.6 billion



- DSM options
- Building and appliance options
- Industrial options
- Public sector options
- Transportation options
- Education options

Emissions Benefits

**Total CO2 Emissions Reduction in 2020 -
8.3 million metric tons per year**



- DSM options
- Building and appliance options
- Industrial options
- Public sector options
- Transportation options
- Education options

Invest in local climate capacity through annual federal appropriations

- \$2 billion – Energy Efficiency and Conservation Block Grants;
- \$250 million – EPA Local Climate Demonstration Grants;
- \$400 million – DOE Clean Cities program for low emission vehicles and cleaner fuels including alternative fuels infrastructure and plug-in hybrid vehicles; and
- \$100 million – Forest Service's Urban and Community Forestry program.

Conclusion

- New Mexico will save a large amount of energy if it adopts the high priority energy efficiency policy options, and possibly other options, described and analyzed in this study.
- By 2020, electricity use could be reduced by 24 percent, natural gas use by nearly 20 percent, and gasoline use by 26 percent, all in comparison to otherwise forecasted levels of energy use that year.