

EFFECTS OF EXTENDING AND EXPANDING ENERGY-EFFICIENCY TAX DEDUCTION FOR COMMERCIAL BUILDINGS

Prepared by Regional Economic Models, Inc. (REMI)

Agenda



- □ Overview of 179D tax provision
- □ Energy efficiency and economic growth
- □ Policy/modeling context
- □ About REMI
- Overview of key results
- Lunch
- □ Walk through simulations

Overview



- Congress has sought to promote energy efficiency through financial incentives – why?
 - Energy independence less reliance on foreign fuel
 - Insulate from fluctuations of energy markets
 - Efficiency gains via lower utility bills
- Incentives can encourage the private sector to find best practices for conserving energy
- Incentive programs can help the economy through tax benefits and energy savings

Incentivizing Energy Efficiency REMI



- □ Section 179D Energy-Efficiency Commercial Buildings Tax Deduction
 - Deduction to provide incentive for companies to design and build energy-efficient structures
 - Program created through the Energy Policy Act of 2005
 - The provision has never been made permanent
 - Expired and reinstated multiple times over the years
- □ \$38 billion per year in commercial lighting costs

Deduction rules



- Deduction of up to \$1.80 per square foot available to owners of new or existing buildings who install:
 - (1) interior lighting; (2) building envelope; or (3) heating, cooling, ventilation, or hot water systems
 - Must reduce the building's total energy and power cost by a certain percentage compared to minimum professional standards (ASHRAE standards)
- □ What about tax-exempt building owners?
 - Allocate to architect/engineer/contractor responsible for design
- Savings must be calculated using qualified software
- Qualified 179D certifiers must verify

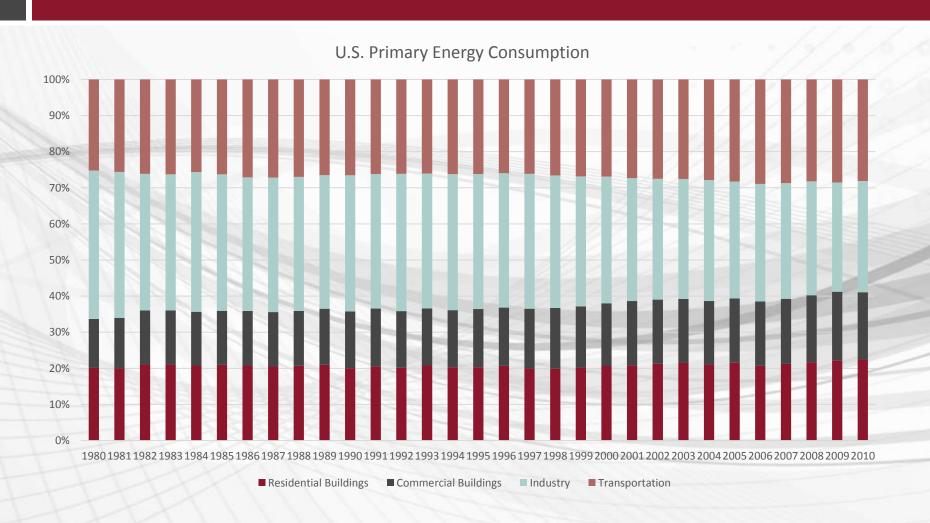
Mechanisms



- Extending the program could yield economic benefits
 - Higher investment in services and materials
 - Lower energy use over time
 - Upfront investment; high labor use
 - Energy employs fewer workers
- Economic analysis does not capture all of the noneconomic benefits – environment, energy independence, grid maintenance, etc.

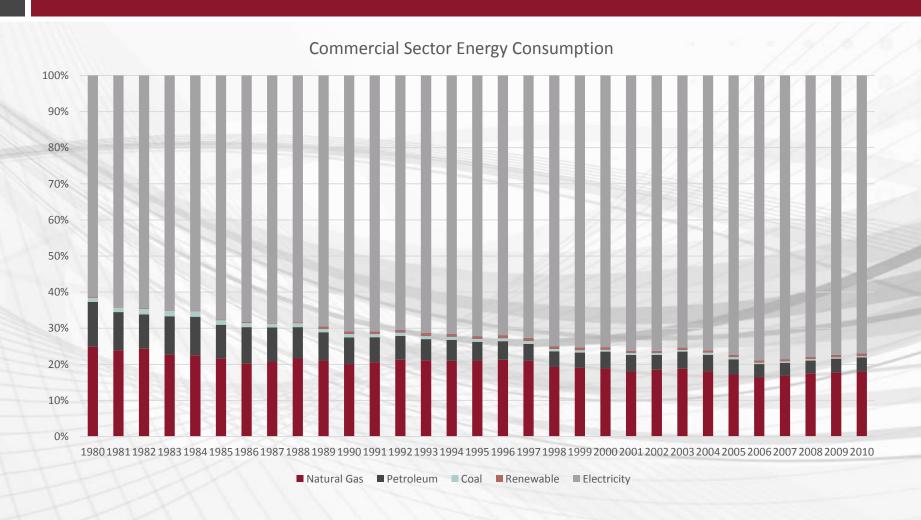
Buildings Share of U.S. Primary Energy Consumption, 1980-2010





Commercial Sector Energy Consumption, 1980-2010

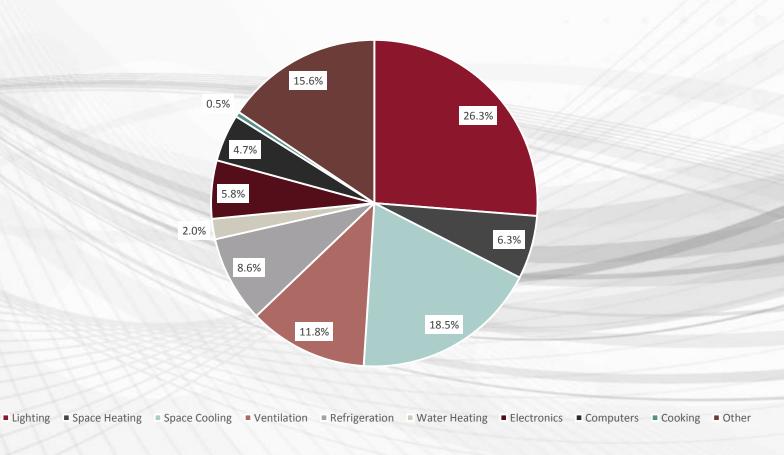




Commercial Building Energy Usage REMI







Policy/Modeling Context



- □ Tax reform key to Trump and Ryan agendas
- Deductions across the board are potentially on the table for revision/expiration
- New administration is willing to "invest" in the form of tax expenditures
- Compelling jobs and economic growth argument are critical to making this case
- □ 179D relationship to private sector

Scope of Analysis



- REMI evaluates the economic impact of three separate scenarios:
 - Extension of Current Law
 - Extend and Expand
 - **■** Strengthen and Modernize

Data/Assumptions



- □ Energy Tax Savers, Inc. 179D certifiers
 - □ \$3.12 of private investment per \$1 of tax incentive
 - \$0.08 of energy efficiency savings per \$1 of tax incentive
- □ Project costs
 - Labor costs: 30%
 - Materials costs: 70%
- Project types
 - HVAC: 75%
 - Lighting: 25%

About



- Research
- Forecasting
- Consistency

Data

Software

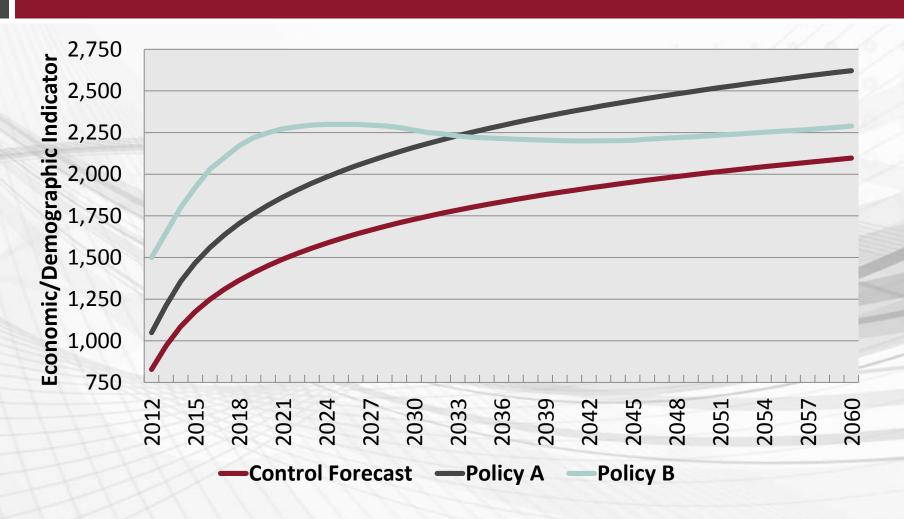
- Dynamic
- Customized
- Integrated

- Consulting
- Training
- Support

Services

Framework

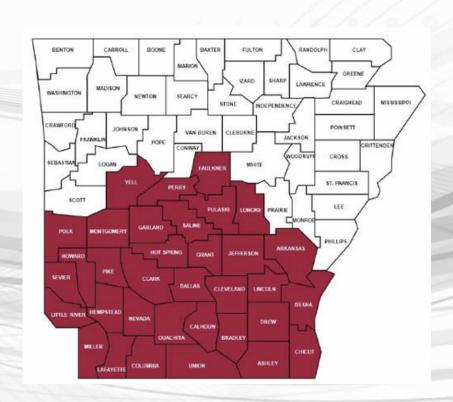




Regions



- How REMI defines model regions:
 - A county or...
 - A collection of counties
 - e.g. an MSA or a state
 - Can cross state borders
 - Multiple regions
 - No requirement for contiguousness
 - Customized by needs



Methodologies





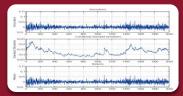
Input-Output (IO) Tabulation

- Industry-to-industry transactions and social accounting matrices
- Supply chains, regional purchase concepts, and multipliers



Computable General Equilibrium (CGE)

- Long-term effects after markets "clear" back to an equilibrium
- Dynamic adjustments to population, fuel mixtures, market shares, etc.



Econometrics

- Estimation of statistical parameters from historical data
- Strength of responses, elasticities, preferences, and "time lags"

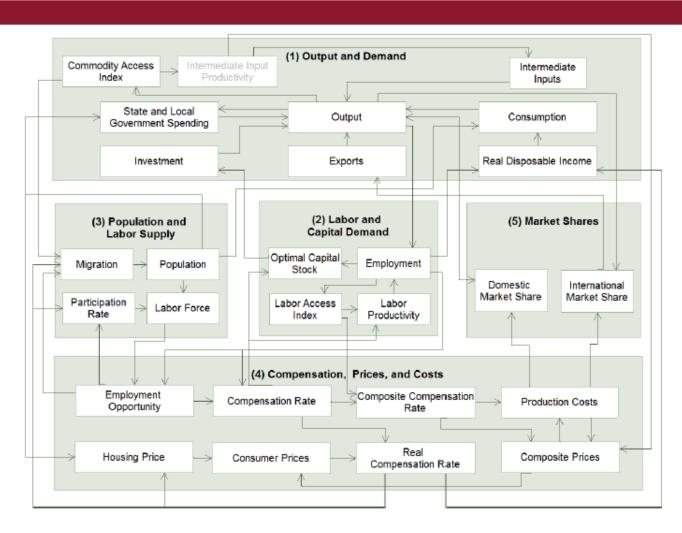


New Economic Geography (NEG)

- Endogenous productivity adjustments from industry/labor clustering
- Full trade flows by industry and interregional competitiveness

Model Structure





Client Types



 Montana Department of Commerce (DOC) Southern California Association of Governments (SCAG) 	Economic and demographic forecast for 56 counties Impact of the \$500 billion long-range transportation plan		
deral Agencies			
Sandia National Laboratory (SNL)	Integration of REMI with energy and financial models		
•U.S. Army Corps of Engineers (USACE)	Environmental impact of closing Chicago River freight locks		
ternational			
Alberta Enterprise and Advanced Education	Supply chain implications for oil and gas developments		
Korean Energy Economics Institute (KEEI)	Development and energy policy for the 10 provinces		
onsultants			
Booz Allen Hamilton	Impacts of new technology on macroeconomic growth		
Cambridge Systematics	Tolling options for Interstate-95 in North Carolina		
cademic Institutions			
•Florida State University (FSU)	Contribution of university system to Florida's economy		
•University of Michigan	Budget planning and tax credit analysis for Lansing		
on-Profits and Research Groups			
National Federation of Independent Business (NFIB)	Healthcare reform and tax credits for small businesses		
•Third Way	State-by-state impact of the "fiscal cliff" and sequestration		

Input Variables



- □ Energy efficiency production cost
- □ Industry tax deductions production cost
- □ Architect/designer deductions production cost
- □ Equipment purchases detailed investment*
- □ Maintenance and repair industry sales
- □ Reduced electricity generation utilities (output)

* "Stock" concept, meaning there are future offsets that are accounted for

Scenario Impacts



Results of this analysis show positive economic impacts over the first ten years in terms of job creation and economic expansion.

INDICATORS	Extension of Current Law	Extend and Expand	Strengthen and Modernize
Jobs	40,749	39,388	76,529
GDP (millions of 2016 dollars)	3,860	3,730	7,398
Personal Income (millions of 2016 dollars)	3,128	3,017	5,729

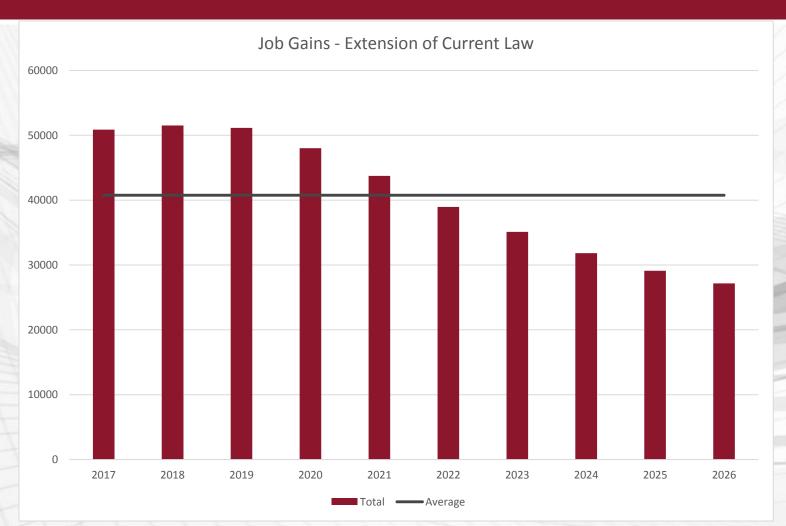
Extend Current Law



- □ Based on PATH Act of 2015
- \$324 million JCT score over ten years for a twoyear extension

Extend Current Law - Jobs

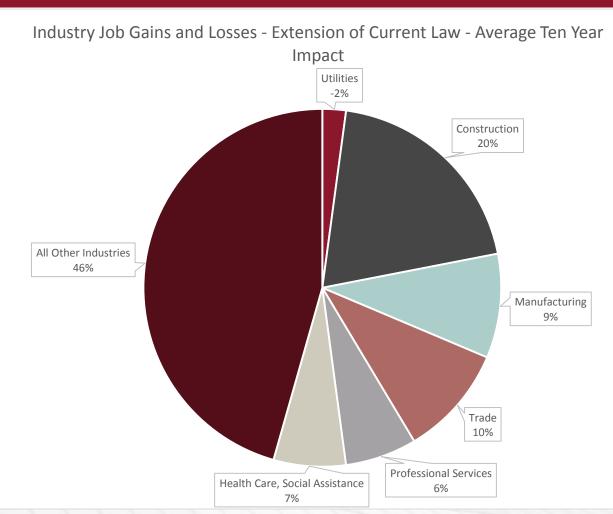




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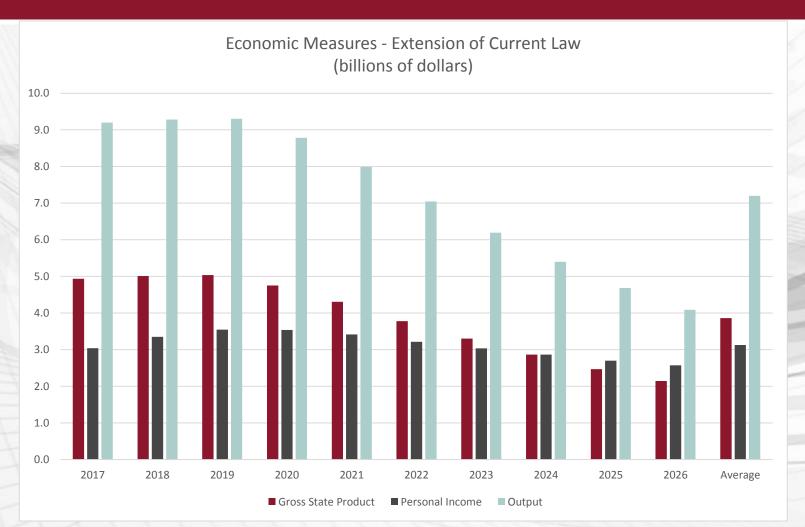
Extension – Jobs by Industry REMI





Extension – Output & Income





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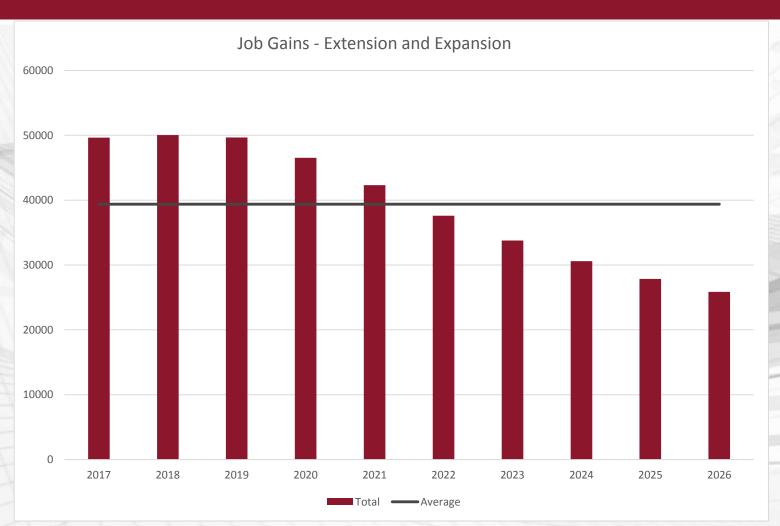
Extend and Expand



- Extension of current law
- Extend to non-profit entities
- Extend to tribal governments
- □ Increase applicable energy efficiency standards

Extend and Expand - Jobs REMI

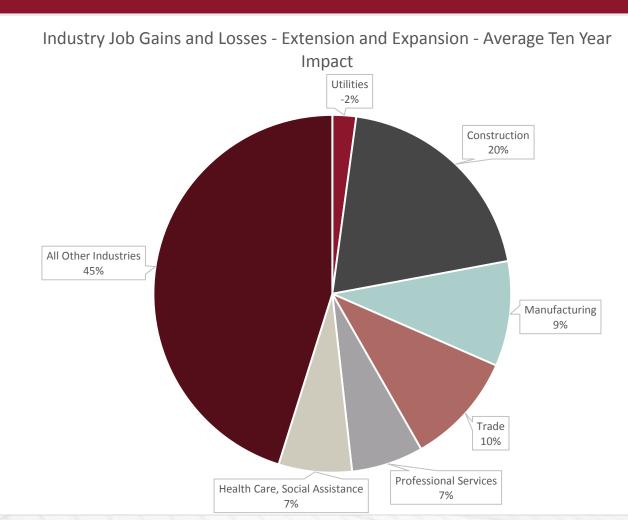




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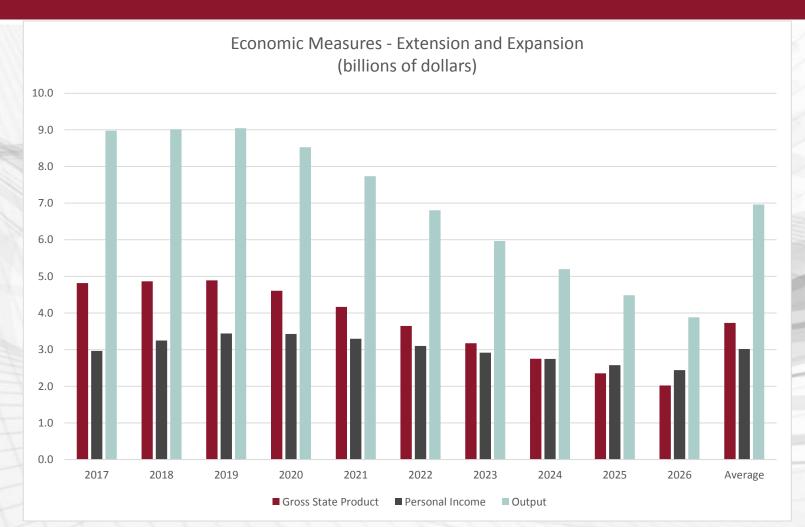
Extend and Expand - Jobs by Industry





Extend & Expand - Output & Income





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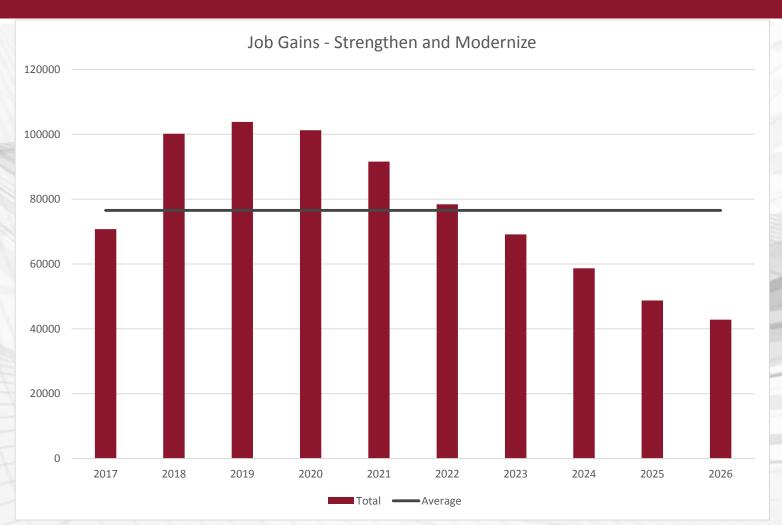
Strengthen and Modernize



- Increase value of deduction
 - □ \$1.80/square foot to \$3.00/square foot
- Increase the applicable energy efficiency standards
- Adjustments to building eligibility
- 81% private, 19% government investment (per BEA)

Strengthen and Modernize - Jobs

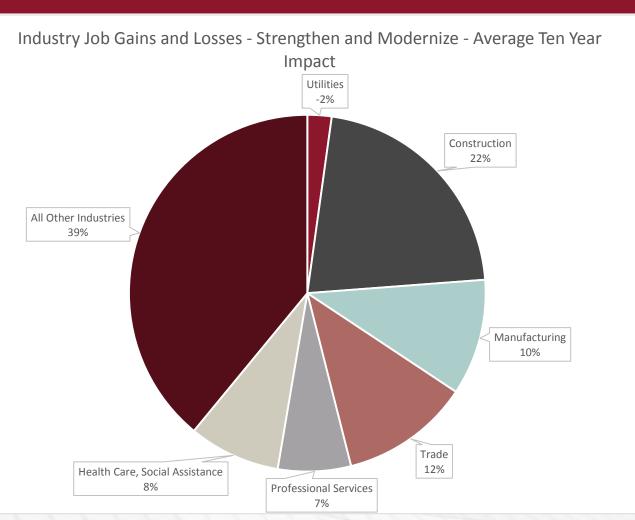




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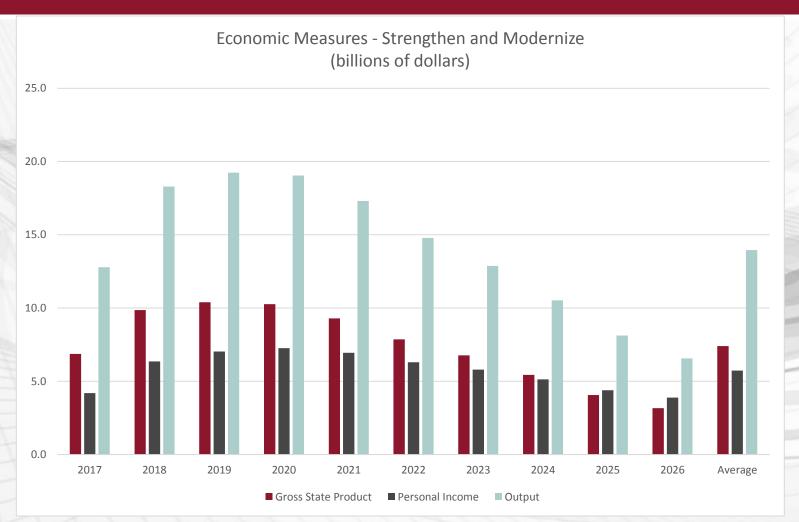
Strengthen and Modernize – Jobs by Industry





Strengthen and Modernize – Output & Income





Conclusion



- Extending and expanding the Section 179D Energy-Efficiency
 Commercial Buildings Tax Deduction will create jobs and expand the nation's economy
- Extending the program leads to an average annual gain of 43,453 jobs, \$4 billion in gross domestic product, and \$2.9 billion in personal income over first five years
- Strengthening and modernizing the existing program can yield even more substantial economic gains