The Economics of Climate Change Proposals in Wisconsin

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Executive Summary

In April 2007, Wisconsin Gov. Jim Doyle signed Executive Order 191 establishing the Governor's Task Force on Global Warming (GTF). The Task Force brings together members of the business, industry, government and environmental consulting communities to create a plan of action for the state of Wisconsin that addresses issues related to climate change.1

Gov. Doyle commissioned the Task Force to identify actionable public policies that will reduce greenhouse gas (GHG) emissions while ensuring that the state remains competitive in the global economy. Pursuant to the goals established in Executive Order 191, the Task Force on Global Warming will advise the governor on current and prospective opportunities that will potentially grow the state's economy through creating new jobs and utilizing alternative fuels in the state's energy and transportation sectors.2

The Task Force's final report to the governor, titled "Wisconsin's Strategy for Reducing Global Warming," was released in July 2008. In the report, the GTF recommends that the state reduce GHG emissions to 2005 levels by 2014, 22% below 2005 levels by 2022, and 75% below 2005 levels by 2050.3 Based on the materials that have been made available, the Task Force is considering GHG emission mitigation options similar to those recently recommended in other states.

The Beacon Hill Institute (BHI) has partnered with the Wisconsin Public Policy Institute to provide estimates of the economic and fiscal impact of selected GTF proposals. To that end, BHI used its STAMP® (State Tax Analysis Modeling Program) for Wisconsin (WI-STAMP) to estimate the economic effects of 13 GTF recommendations against the baseline assumption of no policy changes.4 BHI selected these policies because the GTF report provided specific information regarding costs and a description of the policy proposal. Many of the GTF policy recommendations are vague and do not provide enough information to conduct an analysis. We assume that the proposals become effective in 2009, and we report results for 2020. Table ES-1 summarizes the results.

Table ES-1: Summary of BHI Estimates for 2020

Policy	*Employment*		*Real Disposable Income*	*Per Capita Disposable Income*	*Annual Real Gross wage rate*	*Gross Private Domestic Investment*
	Private	*Public*	*($ million)*	*($/per person)*	*($ million)*	*($ million)*
All Policies	-43,093	12,380	-7,908	-1,012	-1,596	-619
Cap-and-Trade	-25,767	6,716	-1,836	-150	-$495	-561

The first set of results, labeled "All Policies," is based on all 13 policies except for cap-and-trade. This combination of proposals would have significant negative effects on the state economy. The state would shed 43,093 private-sector jobs. Annual investment would drop by about $619 million and real disposable income by $7,908 million. The second set of results, labeled "cap-and-trade," would eliminate 25,767 private-sector jobs. Disposable income would fall by $1,836 million, and investment would decrease by $561 million in 2020.

The Wisconsin paper manufacturing industry is the largest in the country and an important economic engine in Wisconsin, especially in the northern counties. Despite making impressive productivity and energy efficiency gains over the past several decades, the industry has been buffeted by high fuel costs and intense foreign competition. Since 1997, nearly a dozen paper plants in Wisconsin have closed. Due to the energy intensity of the paper manufacturing process, the industry is particularly susceptible to price and tax changes that would likely result from the GTF policy recommendations. We estimate that the paper manufacturing industry would shed an additional 3,496 jobs and investment would drop by $1.8 million in 2020 if the 12 GTF policies, excluding cap-and-trade, were implemented. The cap-and-trade policy reviewed as a stand-alone policy would eliminate 1,934 jobs in the paper industry and decrease investment by $772,005 in 2020.

Not only would Wisconsin's households and firms bear the high burden of the costs of the GTF proposals, but these costs will be borne in the near term. However, any benefits that may accrue will materialize over a period of several years, if at all. Thus, Wisconsin will experience a shock to its economic wellbeing that, given the economic damage produced by the proposals, may well inhibit its ability to fully recover the lost ground in the medium term.

Introduction

In April 2007, Wisconsin Gov. Jim Doyle signed Executive Order 191 establishing the Governor's Task Force on Global Warming (GTF). The Task Force brings together members of the business, industry, government and environmental consulting communities to create a plan of action for the state of Wisconsin that addresses issues related to climate change.5

Gov. Doyle commissioned the Task Force to identify actionable public policies that will reduce greenhouse gas (GHG) emissions while ensuring that the state's economy remains

competitive. The Task Force on Global Warming is charged with advising the governor on current and prospective opportunities that will potentially grow the state's economy through creating new jobs and utilizing alternative fuels in the state's energy and transportation sectors.6

The Task Force's final report to the governor, entitled "Wisconsin's Strategy for Reducing Global Warming," has recently been released to the public. In the report, the GTF recommends that the state reduce GHG emissions to 2005 levels by 2014, 22% below 2005 levels by 2022, and 75% below 2005 levels by 2050.7 Based on the materials that have been made available, the Task Force is considering GHG emission mitigation options similar to those recently recommended in other states.

However, the Task Force fails to provide a true measure of the economic impact of the proposals. Instead, it narrowly focuses on the fiscal impact on the state budget and promotes recommendations, such as low carbon fuel standards, that mandate the use of higher-priced energy and fuel alternatives. This lack of an in-depth cost/benefit analysis leads to statements such as the following:

"…jobs and business opportunities will be created through substantially increased conservation and efficiency programs…through increased reliance on clean and renewable energy resources. To meet these needs, job training and business development programs will be required, as recommended by the Task Force."8

The STAMP Model and the BHI Approach

To produce accurate estimates of the economic impact of the GTF recommendations, BHI utilizes its Computable General Equilibrium (CGE) model for Wisconsin. WI-STAMP (Wisconsin State Tax Analysis Modeling Program) identifies the economic effects of a variety of state policy changes.

WI-STAMP is a five-year dynamic CGE model that simulates changes in taxes, costs (general and sector specific) and other economic inputs. As such, it provides a mathematical description of the economic relationships among producers, households, government and the rest of the world. It is general in the sense that it takes all the important markets (such as the capital and labor markets) and flows into account. It is an equilibrium model because it assumes that demand equals supply in every market (goods and services, labor and capital). This equilibrium is achieved by allowing prices to adjust within the model. It is computable because it can be used to generate numeric solutions to concrete policy and tax changes.9

A CGE model is specified in terms of supply and demand for each economic variable included in the model, where the quantity supplied or demanded of each variable depends on the price of each variable. Policy changes are shown to affect economic activity through their effects on the prices of outputs and on the factors of production (principally, labor and capital) that enter into those outputs.

The model distinguishes between producers and consumers. Consumers (households in the model) earn income by supplying labor (wages and salaries) and capital (dividends and interest);

they also receive transfer payments such as pensions from different levels of government (federal, state and local). They are assumed to maximize their utility, which they do by using income to buy goods and services, pay taxes and save. Their spending decisions are strongly influenced by the structure of prices they face, and the amount of labor that they are willing to provide depends, to a substantial degree, on the wage rates that they face.

Producers and firms buy inputs (labor, capital and intermediate goods that are produced by other firms) and transform them into outputs. Producers are assumed to maximize profits and are likely to change their decisions about how much to buy or produce depending on the prices they face for inputs and outputs. In addition, there are three government sectors (federal, state and local) that collect taxes and fees and provide services and transfers. The rest-of-the world sector consists of the entire world outside of Wisconsin.

The WI-STAMP supplies changes to various economic indicators as output, such as changes in employment and investment, which is then used to analyze the effect of policies. These outputs are based on formulas in the underlying model, such as the labor participation rate, defined as the proportion of households in any given income category that work. The participation rate is assumed to rise if wage rates rise, if the taxes levied on earnings fall, or if the transfer payments paid out per non-working household fall. The participation rate for low-income households is assumed to be highly sensitive to the level of transfer payments, but relatively insensitive to changes in taxes or the wage rate. On the other hand, high-income households are assumed to respond substantially to changes in the taxes and wage rates they face.

Changes in investment levels are another example of an economic indicator that supplies information about the economic effect of different policy recommendations. The amount of gross investment in any given sector depends on the after-tax rate of return in that sector relative to the return in the base period. The terminology here can be confusing; investment destined for agriculture, for instance, consists of the purchases of goods that will add to the capital stock in the agricultural sector; the goods themselves will mainly come from other sectors (the sectors of source). When the changes across all sectors are summed together, the change to total investment in the state is the result.

To reduce GHG emissions, the GTF proposals seek to alter the economic decisions made by producers, consumers and governments. They do so by changing the incentives, both negative and positive, faced by all three sectors of the economy. To achieve this end, the GTF employs numerous implementation tools, each affecting economic decisions and economic activity in Wisconsin. These tools include increasing taxes and tax credits, providing state-financed low-interest loans and mandating the purchase of more energy-efficient products as well as renewable energy production levels. It also seeks to reform the rate structure in the utility sectors. Since the GTF assumes these recommendations will change economic behavior, we assume that current economic agents are not making these choices in their absence. Moreover, since agents are not making these choices today, the proposals impose a higher cost than those currently employed. If the implementation of these proposals imposed no cost, or produced a cost savings, in the absence of market failure, economic actors would have already adopted them. Therefore, we can assume the implementation of these proposals would involve increased costs, at least in the short to medium term.

BHI examined 13 of the GTF proposals and estimated their effect on the Wisconsin economy as a whole and on the paper sector in particular. BHI selected these policies because the GTF report provided specific information regarding costs and a description of the policy proposal. Many of the GTF policy recommendations are too vague and do not provide enough information to conduct an analysis.

Each proposal was treated as a change in state tax policy or as a change in the price of goods and services within a specific industry. For those policies that the GTF estimated a budgetary impact on a state fund, we assumed that those taxes that supply the revenue for the fund would need to increase to support the new spending. For example, GTF estimates that the proposals to fund nutrient and manure management and encourage prairie planting would cost the general fund between $56.4 million and $114.8 million. BHI treated these programs as straightforward tax changes. However, the proposals that mandate a reduction in the carbon intensity of motor vehicle fuels or alter the state Renewable Portfolio Standard (RPS) requiring that a portion of electricity production derive from renewable sources would likely alter the prices of motor fuels and electricity in Wisconsin. BHI treated these policies as price increases.

Once we quantified the tax and cost changes, we simulated their effects on the state economy using the WI-STAMP model. The model provides estimates of the proposals' impact on employment, investment and incomes within Wisconsin. The model also provides industry-specific employment and investment output. Each estimate represents the change that would take place in the indicated variable against a "baseline" assumption about the value that variable would take in the indicated year.

Here we provide an analysis of 13 policies recommended by GTF. Table 1 contains the recommendations and the expected reduction in annual costs for 2020, as calculated by GTF. We divide the recommendations under the categories: Industrial, Utility Supply, Agricultural and Forestry and Transportation.

According to GTF, the recommendations would reduce GHG emissions by between 32.10 and 35.71 MMtCO2e by 2025. GTF provides a wide range of possible cost estimates for the reduction in GHG, reporting that the estimates would cost between $1,379.3 million and $2,711.3 million annually to the citizens of Wisconsin.

Table 1: GTF Policy Recommendations for BHI Simulations

Recommendation	GHG Reductions Estimates (MMtCO2e)	GTF Estimate of Annual Costs ($ million)
Industrial		
Industrial Efficiency Incentives	1.84	$15.00
Boiler Fuel Switching	0.365 to 1.4	$4.00
Energy Intensity Reduction with Feebates	NA	$26.0 to $52.0
Utility Supply		

Enhanced Conservation Energy Efficiency	14	$380
Enhanced Renewable Portfolio Standard	11.6	$612.0 to $1,109.0
Cap-and-Trade Program	NA	NA
Agricultural and Forestry		
Production, Capture and Use of Animal Methane	0.43 to 3	$272 to $1,022.5
Nutrient and Manure Management	0.97	$44.80
Encourage Prairie Plantings	0.29	$11.5 to $70
Transportation		
Low GHG Fuel Standard	4.0 to 4.3	NA
California Vehicle Emission Standards	2.6	NA
E85 Infrastructure Development & Pricing Incentives	NA	NA
Government Fleet Adoption of Plug-in Hybrid Electric Vehicles	Less then 0.0016	$14.00
Total	**36.10 to 40.01**	**$1,379.3 to $2,711.3**

The Utility Supply recommendation for the Enhanced Renewable Portfolio Standard and the Agricultural and Forestry policy for the Production, Capture and Use of Animal Methane are responsible for the large variation in estimating the costs. The GTF working groups provide a range of estimates to account for the long time frame and the level of uncertainty involved in the assumptions that support the estimates.
Industrial

BHI reviewed three of the GTF's policy recommendations concerning the industrial sectors of Wisconsin. According to GTF, these policies would reduce GHG emissions by between 2.21 and 3.24 MMtCO2e by 2025.

Industrial Efficiency Incentives

The GTF proposes that the state of Wisconsin provide incentives to industrial firms to conserve energy and make investments in energy efficiency. The incentives would include cash grants, tax incentives, accelerated environmental permitting process and loans and industrial development bonds. The grants, tax credits, loans and permitting would help companies fund energy audits and encourage the purchase of more efficient equipment and promote conversions to energy-efficient manufacturing processes and the manufacture of the energy-efficient equipment.

The state would use its tax-free debt status to generate the sale of development bonds to private

investors as well as provide funds to companies that would transform facilities to manufacture the component parts of renewable energy products, such as solar panels and wind turbines.

The GTF suggests a funding level of "at least $15 million per year," yet deeper into the policy recommendation it admits that the $15 million price tag is unrealistically low. Additionally, when economic costs, not just financial costs, are considered, the total cost is likely to be much higher. These incentives need to be structured to produce positive benefits; otherwise they will fail to influence the investment behavior of industrial firms.

The development bonds also run the danger that public officials may make investment decisions based on promised GHG emission reductions of the proposed projects and not the financial viability. State employees generally do not have the expertise to allocate capital efficiently. When venture capitalists or private banks make loans they are risking their own, or their company's money. When the state government supplies loans it is risking taxpayer's money, and by offering these energy-efficiency loans as low- or no-interest loans, this risk is being placed on taxpayers without any possible reward.

We assume the incentives (excluding the development bonds) would be funded through the general fund and, thus, would require a tax increase of a minimum of $15 million, all other things being equal. This requirement for increased revenue was modeled as an increase in the state personal income tax, the single largest source of revenue for the state general fund.

Incentives for Boiler Fuel Switching

The policy would provide state incentives for forest product companies to refine "forest residue" into boiler fuel and owners of industrial boilers to make the changes necessary to use biofuel instead of fossil fuels. The GTF defines forest residues to include defective portions of trees, unmarketable trunks, trees removed for the purpose of thinning, and other waste materials from logging and forest management operations. The policy goal is to convert 50% of forest residues into biofuels. Citing high costs of such a transition, the GTF sensibly declined to recommend mandates that all fossil fuel boilers switch to biofuels or that all coal-fired power plants switch to natural gas.10

The GTF provides incentives to owners of industrial wood-fired boilers to make the changes necessary to increase their utilization of forest residues or non-wood biomass as fuel source. The GTF suggests incentives in the form of grants, low-interest loans, fuel subsidies and fast-track environmental permitting.

The GTF also suggests initial government funding levels of $1 million per year for the supply-side incentives and $1.5 million annually in grants and $1.5 million in low-interest loans for the boiler conversions, for a total of $4 million. BHI modeled the proposal as increased general fund spending requiring increases in state taxes proportional to their current proportion of total state tax revenues.

Energy Intensity Reduction with Feebates

The Energy Intensity Reduction with Feebates policy attempts to reduce GHG emissions by requiring each business sector to reduce the average energy intensity of each unit of output. The GTF sets a goal of reducing the energy intensity per unit of output for each sector by 2% per year using a feebate to achieve the goal.

The GTF recommends that the Wisconsin Department of Natural Resources explore "if there is significant interest among Green Tier participants in pursuing the proposal."11 The Green Tier program encourages voluntary environmental performance that exceeds minimum standards and strives to lower the overall transaction costs associated with environmental compliance through recognition and incentives to participants, and so the policy appears to be voluntary. However, if the policy were voluntary, one could assume firms and industries would only participate if they were reasonably sure that they could meet the requirements at minimal or no cost.

As a result, the policy would have no impact as those industries or firms that cannot reach the threshold would not participate, and would not reduce GHG emissions or additional costs against the baseline or current situation. Therefore, we simulate the policy as if it were implemented as being mandatory across all industries, which would produce GHG emissions reductions intended by the GTF.

The policy would assess a fee on "below-average performers" to punish firms that do not reduce their energy intensity by the required quantity. A rebate would be paid to those businesses that exceeded the required reduction in energy intensity. The "feebate" rate would be based on annual energy bills. Firms would pay a feebate equal to the difference between their percentage energy intensity reduction and the percentage required.

If we use energy efficiency as a proxy for general efficiency, then the policy would place the least-efficient producers, who are already less competitive, at a greater competitive disadvantage relative to the more efficient firms. Those firms forced to pay the fee at the margin would likely come under increased pressure and possibly fail, and the number of suppliers in the sector would be reduced and prices would rise.

The U.S. Department of Energy (DOE) estimates energy intensity for each year by using the Energy/Gross Domestic Product by State (E/GDP) ratio. This ratio captures the amount of energy needed to produce a dollar's worth of goods and services in the U.S. Like DOE, we use the E/GDP ratio as a proxy for energy intensity.

Between 1985 and 2004 the E/GDP ratio declined an average of 1.6% per year. We assume that the E/GDP ratio continues to decline at the same rate. With a natural decline in energy intensity of 1.6%, businesses in Wisconsin would only have to reduce their energy intensity (or pay a fee) by an additional 0.4% to meet the new 2% reduction requirement.

In order to calculate the feebate, we estimated the total business energy expenditures in Wisconsin. We included only energy expenditures in the commercial, industrial and transportation sector (subtracting residential consumption of the transportation sector).

	Spending ($ million)
	3,352.87
Industrial Sector	4,978.83
Transportation Sector	8,320.65
Total Business Energy Expenditures	16,652.34

Using data supplied through 2006, we project future energy consumption. Table 2 shows our projected energy expenditures for the commercial, industrial and transportation (excluding residential transportation) sectors. Total energy expenditures for all three sectors equaled $16.652 billion in 2008. We assume that a 0.4% fee annually would result in $66.61 million in new government fees, increasing the cost of utilities for all sectors.

Utility Supply

The Enhanced Conservation and Energy Efficiency (ECEE) policy aims to increase resources dedicated to energy conservation and efficiency through a utility tax, commonly referred to as a Public Benefit Charge (PBC). The charge, which funds Wisconsin's Focus on Energy program, is currently assessed at 1.2% of utilities' revenue. Focus on Energy uses the money to reduce overall energy consumption in the state. This policy would remove the current spending cap limit and set an energy-saving goal.

The current program results in an estimated 0.4-0.5% reduction in electricity consumption and a 0.3% reduction in natural gas use.12 The GTF recommends goals of 2.0% and 1.0% for electricity and natural gas, respectively. The program would "then be funded appropriately to achieve the goal."13 Assuming a linear relationship between energy cost and energy reduction, this would more than triple the PBC. For the period between July 2007 and December 2008, Focus on Energy generated $94 million in revenue or approximately an annual rate of $63 million.14 The GTF reports estimated costs of $285 million in 2012, or a 450% increase, growing to $380 million in 2020, which includes only administrative, measurement and verification costs.

The GTF report states that it employs "a cost/benefit ratio methodology which does not recognize the potential for greater economies of scale, more innovative or effective programs, or more innovative and effective approaches to funding."15 The report also contends that each dollar the Focus on Energy program spends produces two dollars in energy savings, a 100% return.16 It is not clear that the GTF accounted for diminishing marginal returns or opportunity cost when making their cost calculations.

Presumably Focus on Energy has already implemented the most cost-effective programs, or harvested the low-hanging fruit. At the margin, each additional percent of reduction will be more difficult and expensive to achieve, as the program encounters diminishing marginal returns. As a result, to accomplish a tripling of current energy reductions would likely cost more than triple the original expenditure. If the rate of return were constant at 100%, then why does

the GTF not recommend a much larger investment in the Focus on Energy program? If $285 million in 2012 will return $570 million, why not dedicate $2 billion and achieve savings of $4 billion?

In addition, the GTF counts the additional dollars that would be funneled to the Focus on Energy program as the cost that creates a return on the investment. However, these funds could be used to fund healthcare, education or other investments that would also generate a return. It appears that the GTF report does not account for the cost of this lost opportunity in the calculations. Moreover, the GTF does not specify the length of time that the energy efficiency measures take to completely pay off. If the investment requires a long payoff period, then it is inappropriate to compare the same dollars across time.

Energy efficiency measures create the most concrete benefits of all the GTF programs, as they save energy, and consumers save money directly on their bill. Achieving more efficient methods of production is at the heart of economics, and energy efficiency is no exception. It is likely that investments in energy efficiency programs, in both the private and public sectors, will provide net positive benefits. However, one must be careful to include all costs and benefits when estimating proposals' net position.

BHI modeled the ECEE program costs as an increase in fees for the utility sector, using the GTF's $380 million estimate of the program costs in 2020.

A Renewable Portfolio Standard (RPS) requires electric utilities to produce a certain percentage of retail electricity from renewable sources. A portion of the standard can be satisfied through the purchase of Renewable Energy Credits (REC) from another producer. Renewable energy sources include wind, solar, tidal and wave energy, hydropower and biomass.

The GTF proposes pulling forward the current RPS goal of 10% from 2015 to 2013, and then achieve 20% by 2020, and 30% by 2025.17 The program would also require that, at minimum, 6% of the total 10% goal would be met with resources within the state of Wisconsin -- increasing to 14% of the 20% total in 2020 and 15% of the 25% total in 2030.

The proposal would also make other changes to the existing Wisconsin RPS. First, it would expand the previous definition of renewable energy sources beyond electricity generation to include biomass and biogas. Also, hydroelectric power plants larger than 60 MW (megawatts) and located outside Wisconsin would now be eligible for the non-Wisconsin portion of the standard. Finally, it would allow RECs to be carried forward for an unlimited time in the future.

The GTF estimates that its energy sector recommendations would reduce GHG emissions by 11.6 MMtCO2e by 2020 and that a similar policy would cost between $612 million and $1,109 million by 2025.18

The GTF cost estimates are likely to be low considering that, according to the DOE, renewable sources only accounted for 4.9% of Wisconsin's total electric power generation in 2006, of which hydroelectric sources accounted for a full 2.7% of the total. To fulfill the requirement of 6%, and assuming hydroelectric capacity remains constant, electricity generation from other

renewable sources would need to grow 50% by 2013. This task is even harder in light of the fact that Wisconsin's other renewable energy generation dropped between 2006 and 2007.

However, these targets become easier to achieve were Wisconsin to buy hydroelectric power from sources outside the state, such as Manitoba Hydro. Manitoba Hydro operates over 14 hydroelectric generating stations in the Nelson, Winnipeg, Saskatchewan and Laurie rivers.19 While an agreement would enable Wisconsin to achieve the RPS goals, the goal would be met with sources outside the United States and under less stringent rules than apply within Wisconsin. It appears that the GTF lacks confidence that the goals can be reached without buying renewable power from outside the state, which essentially does not increase the portion of renewable energy produced in Wisconsin.

BHI assumes that the RPS is not met through importing energy that does not meet the GTF's strict standards. This would truly be a Wisconsin RPS. BHI estimated the cost of building new renewable electricity facilities in Wisconsin to meet the RPS requirement. Table 3 contains the results.

New renewable electricity facilities require costs including construction, or capital costs, fixed and variable costs for operations and maintenance and fuel costs, in the case of biomass and waste resource facilities. The costs of building new renewable facilities will be the largest cost to comply with the RPS, which we estimate to be $18,752 million from 2013 to 2025. Operating and maintenance and fuels cost will add an additional $287 million.

Balanced against the costs of the new renewable electricity generation facilities are savings from avoiding the construction of new conventional electricity-generating facilities. The avoided costs of new conventional facilities total $2,811 million, bringing the total costs of the RPS to $16,228 million through 2025.

Cost Type	**2013**	**2014-2020**	**2021-2025**	**Total**
Capital Costs	4,798.33	6,985.00	6,969.01	18,752.34
Fixed and Variable O&M*	3.13	178.31	105.57	287.01
Avoided Costs**	-231.89	-1188.24	-1390.92	-2,811.05
Total	4,569.57	5,975.07	5,683.66	16,228.30
*Operations, maintenance and fuel for biomass and animal waste electric facilities. **Includes capital, fixed and variable O&M and fuel of conventional sources of electricity.				

To calculate the cost of new sources of renewable energy, BHI utilized data from the Energy Information Agency. We collected data of Net Generating Capacity (in megawatt hours) and Net Summer Capacity (in megawatts) from the Wisconsin Electricity Profile for 2007.20 These figures were grown through 2025.21

To these totals, we applied the percentage of new renewable generation proscribed by the GTF. For example, 10% of total electricity generation in Wisconsin must be from new renewable sources by 2013. This process was repeated for 2020 and 2025. Table 4 displays the results.

	2013	**2020**	**2025**
Total Electricity Generation (GWh)	86,728	92,325	94,116
Renewable Generation (GWh)	8,673	18,465	28,235
Net Summer Renewable Generation (MWh)	1,991	4,238	6,480

Because our estimates of the new renewable energy requirements under the RPS are expressed in terms of total megawatt hours and net summer capacity in megawatts, we can calculate the net costs of building and operating the new renewable sources. These include the overnight capital costs (if a facility could be built overnight), variable and fixed operations and maintenance (O & M) costs, fuel costs and avoided cost (cost savings from not building a conventional facility).

We calculated the overnight costs using information from the "Assumptions to the Annual Energy Outlook, 2009." 22 The costs are displayed by technology (geothermal, landfill gas, photovoltaic, wind, and biomass) by year (2010, 2020) and a high-cost and low-cost reference case. We used figures from the low-cost reference case and 2010 and 2020 for each technology of renewable energy. We calculated an average overnight capital cost of renewable electricity generation using U.S. Net Summer capacity to weight each technology.23 Table 5 contains the results.

	2010			2020		
Source	Capital Costs	Fixed O&M	Variable O&M	Capital Costs	Fixed O&M	Variable O&M
Biomass	3,636	64	7	3,116	55	6
Hydroelectric	2,801	14	2	2,058	10	1
Wind	2,791	30	0	2,544	28	0
Weighted Average	**2,108**	**41**	**3**	**2,284**	**20**	**1**
Conventional (Combustion Turbine)	661	12.11	3.59*	661	12.11	3.59*
*Includes fuel costs of $0.02 per kilowatt.						

As one can see from Table 5, the EIA estimates for overnight costs of renewable energy show a decrease from 2010 to 2020. This is due to expected technological advances in the production of renewable energy.

Next we calculated a weighted average cost of renewable energy using the Energy Center of Wisconsin estimates of the potential renewable resources in Wisconsin.24 The weighted average figures were applied to the new megawatts needed to satisfy the RPS requirement for the appropriate year (2013, 2020 and 2025). The fixed and variable costs were reduced for 2020 by the percentage reduction in capital costs between 2010 and 2020.

Next we calculated the capital, fixed and O&M costs for conventional electricity generation using assumption tables from the EIA's Annual Energy Outlook 2009. These costs were applied to the amount of electricity that would be generated by new renewable sources under the RPS, since this represents the amount of conventional electricity generation capacity that presumably will not need to be built. We adjusted the avoided cost of conventional electricity downward to reflect the unreliability of solar and wind power.

In order to estimate the impact of the RPS, we estimated the size of the utility sector within the STAMP model through 2025. We calculated the percentage increase represented by the net costs of RPS for each year that the RPS increases, 2013, 2020 and 2025. We input these percentages into the STAMP model as an increase in state fees applied to the appropriate sectors. The additional revenue stream was allocated back to the utility sector. The result would be that utility customers would pay a higher price for utility services that would be refunded back to the industry.

The GTF also recommends a cap-and-trade program, typically considered by policy experts as an intricate and in-depth policy. While numerous details are left out of this policy recommendation, such as target emission levels, the program does suggest "the C&T (cap-and-trade) program should cover the largest possible market," including a federal program.26

A cap-and-trade program contains two major parts. The first part is the "cap," which sets the maximum quantity of GHG emissions. The cap then decreases annually until a predetermined target is met by a specific date. The cap can apply to all GHG sources over a specific threshold, or a specific sector of the economy, such as electric utilities.

The second part is the "trade" or trading of permits to emit GHG. Typically a program will involve some form of an auction or other method to distribute permits to emitters. Thus the government artificially creates a shortage of permits to emit GHGs and a market to trade the now valuable permits.

The cap-and-trade policy lacks concrete details required for a full cost/benefit review and suffers a similar issue of a very narrow view of costs in addition to a complete lack of consideration of benefits.

Based on BHI's previous reviews of cap-and-trade proposals, such programs are rarely economically beneficial for a region.27 To examine the effects of a cap-and-trade policy on

Wisconsin's economy, BHI used the estimated price increases shown in Table 6 to calculate the increased cost of energy that residents of the state would encounter.28 This estimate is based on a study of the effects of the Lieberman-Warner policy on energy prices by sector. These prices were then weighed according to use by sector to find an overall price increase, which was then entered into the WI-STAMP model.29

Sector	**Percent Change in Fuel Costs**		
	Low Case	*High Case*	*Average*
Electricity	31%	38%	34.5%
Gasoline	20%	68%	44.0%
Natural Gas	29%	40%	34.5%

Agriculture and Forestry

BHI reviewed three policy recommendations made by the GTF under the Agriculture and Forestry sectors working group. These policy recommendations (Production, Capture and Use of Animal Methane, Nutrient and Manure Management and the Encouragement of Prairie Plantings) increase state government spending while reducing GHG by an estimated 1.69 to 4.26 MMtCO2e by 2025.

Production, Capture and Use of Animal Methane

This policy recommendation focuses on increasing the capture of methane produced by farm animals in the form of decomposing waste. The amount of captured methane would be enhanced through the use of digesters, which would speed decomposition and methane production. The methane would be burned to produce electricity.

Targeting methane capture is a solid strategy to reduce GHG emissions, since it is considered "over 20 times more effective in trapping heat in the atmosphere than carbon dioxide."30 However, the program's cost appears to be high, since methane is typically produced through the decomposing of waste (either manure or landfill), and increasing methane production would be difficult. The proposed digesters merely help to hasten the natural process, not create more.

In total, the GTF would spend $132.5 million annually, with an additional $139.5 million to $890 million of indirect costs for the digesters themselves. The direct costs would be paid out of the general revenue fund. The indirect costs would be borne by the digester owners, but since these digesters are not being purchased without government intervention, we assume the state will have to provide some form of incentives to offset these costs.

The benefits of the program derive from the electricity produced from the methane. The GTF estimates that the
program could produce a maximum 2.93 million MWh per year, if all of Wisconsin's cows were part of the program.31 According to the U.S. Department of Energy, the average retail price of electricity in Wisconsin is $0.0813 per KWh. Converting MWh to KWh (1000 KWh = 1 MWh) and multiplying the total by $0.0813, we estimate the total maximum value of the electricity that could be produced from the program to be $238.21 million annually. However, it is unreasonable to assume that the program could achieve a 100% participation rate.

The average of the indirect costs was added to the direct costs, totaling $647.25 million, and input into WI-STAMP as an increase in the state taxes proportional to their current proportion of total state tax revenue.

Nutrient and Manure Management

The Nutrient and Manure Management policy recommendation allows the state government to "optimize fertilizer application" through government incentives. The policy recommends using the same manure that is to be decomposed and burned in the previous policy, resulting in overstating GHG reduction numbers. The GTF estimates that policy would cost the state $44.8 million annually and "includes only state costs of cost-share funding. It excludes private costs," thus rendering the costs estimate incomplete.

By spending $44.8 million out of the general revenue funds, without considering total costs and benefits, the GTF is ignoring its stated policy of paying careful attention to "potential costs of the recommended policies on consumers and Wisconsin's industrial base."32 Currently Wisconsin farmers maximize their profit by engaging in a proper balance of expenses, for example fertilizer, and income, as a result of sales.

The $44.8 million annually in expected incentive costs will be taken from the state general fund, requiring higher taxes on state residents. Using WI-STAMP, BH quantifies the effects of higher taxes.

Encourage Prairie Plantings

BHI considered the policy to use state funds in the amount of between $11.5 million and $70 million to encourage prairie plantings, in an effort to increase the carbon storage pools. This money would be used to fund 10-plus-year contracts with landowners in an effort to promote plantings that will capture more carbon than under the baseline.

With a sunset provision of 20 years, it is questionable if the plantings will continue after the government handouts end or if the prairie will revert back to its prior practices, releasing the carbon back into the atmosphere. Regardless, the annual funding, in addition to $450,000 in research funding, will come from state funds for a total average increase of $41.2 million annually.

To model the three combined Agriculture and Forestry policies, BHI combined the estimated cost of the programs, a total of $733.25 million, and quantitatively analyzed the tax policy implications by increasing state taxes equal to their current proportion of total state tax revenue.
Transportation

GTF estimates that the transportation sector is directly responsible for 24% of GHG emissions in Wisconsin. BHI simulated two transportation proposals that GTF estimates will reduce GHG emissions by 42.6 and 45.9 MMtCO2e, but the GTF fails to provide a cost estimate of implementing the policies.

Adopt California Vehicle Emissions Standards

GTF recommends that Wisconsin adopt California Clean Car standards that would require all new cars sold in Wisconsin to reduce GHG emissions by 30%. The GTF calls for Wisconsin to join states that support the standard and to lobby for it to become the national standard. The GTF also calls for the state to develop a comprehensive consumer transportation education and marketing program, to aid automakers in the sale of highly efficient vehicles. This effort should be part of the marketing campaign of the proposed Comprehensive Initiative to Support Long-Term Voluntary Greenhouse Gas Emission Reductions.33 GTF estimates that the proposal would reduce GHG emissions by 2.7 MMtCO2e annually by 2020; however, GTF fails to provide a cost estimate beyond raw per vehicle cost and fuel savings data.

The recommendation would force automobile manufacturers to make upgrades that would increase the cost of new cars. Consumers would benefit from the increase in the gas mileage performance of the upgraded cars. The analysis seeks to determine if the gas savings outweigh the higher manufacturing cost of new automobiles.

The calculation is further complicated by the new Corporate Average Fuel Economy (CAFE) standards adopted by the federal government as part of the Energy Independence and Security Act of 2007, which mandates higher average fuel efficiency for the United States. The CAFE standard mandates average fleet-wide fuel efficiency of 35 miles per gallon by 2020 for all passenger vehicles and light trucks.34 However, it does not mandate the path or timing of any increases prior to 2020.

The GTF numbers are based on projections by the California Air Resources Board (CARB) that the updates would cost $300 per vehicle for a 23% GHG reduction in 2012, $790 per car for a 30% reduction in 2016 and provide substantial fuel savings to the owner over the lifetime of ownership. The GTF also notes that the Alliance of Automobile Manufacturers estimates CARB regulations will increase average vehicle prices by $3,000 in 2016.35 The GTF appears to take the CARB estimates at face value, while dismissing the manufacturer's numbers. However, CARB is not a neutral source of information, and the impartiality of its methods has been questioned.36 Moreover, the GTF does not provide reference to a specific CARB source for these figures or define "lifetime" in their lifetime savings figures; and the payback to vehicle owners, in terms of saved fuel, is dependent on volatile gasoline, diesel and ethanol prices.

BHI was unable to find these figures in any CARB reports, but we were able to find CARB figures from a 2004 factsheet stating that a 30% reduction would result in a cost increase of $1,064 per new vehicle, with the increased costs being offset by fuel savings.37

BHI uses the mean of the CARB and Alliance of Automobile Manufacturers' two cost estimates to estimate the increase in costs of $2,032 per new car. We used the California Air Resource Boards estimate that fuel savings would offset the $1,064 cost increase, resulting in an estimated net cost increase of $968 per new vehicle sold.

Using U.S. Bureau of Transportation Statistics data for national new car sales and car registration data for Wisconsin, we calculate the ratio of vehicle registrations in Wisconsin to total registrations in the United States as 2.1%.38 We apply this ratio to total new car sales in the United States, as reported by the U.S. Department of Commerce, to estimate the number of new cars sold in Wisconsin in 2007.39 We grow this figure by the average growth rate for new cars in the U.S. from 1990 to 2007, or 1.3%, to estimate new car sales in Wisconsin. We multiply the estimated increase in new car cost, $968 per car, by the new car sales to estimate the total increase in new car costs at $353 million in 2009. This figure represents 3.13% of the total transportation equipment manufacturing sector in the WI-STAMP model.

We increase the price index for the transportation equipment manufacturing sector by 3.13% in the transportation simulation to estimate the impact of the policy on the Wisconsin economy.

E85 Infrastructure Development and Pricing Incentives

E85 refers to a mixture of 15% gasoline and 85% ethanol. The GTF proposes the E85 Infrastructure Development and Pricing Incentive policy to reduce CO2 emissions by supporting the use of E85. The policy proposes to increase the availability of E85 at Wisconsin's gasoline stations from the current level of 61 stations to a goal of 500 stations by 2015.

The policy is designed to provide incentives for gasoline stations to offer E85. Further, it calls for the state government to subsidize the conversion of one pump per gasoline station at a rate of $25,000 per pump, for a total cost of approximately $11 million. In addition, the government would offer an additional $3 million to subsidize the building of four E85 distribution terminals and other railroad infrastructure. Finally, the state would provide a subsidy in an attempt to make E85 competitive with conventional gasoline at the retail pump. This subsidy would be equal to the tax on E85 (tax subsidy), which is about $0.329 per gallon--in other words the government would waive the tax on E85. The GTF envisions all three subsidies would be funded through the general fund.

The GTF provides cost estimates for the infrastructure subsidies, but not the tax waiver. Using data from the U.S. Bureau of Transportation Statistics (BTS) and the U.S. Energy Information Agency (EIA), BHI estimated the cost of the subsidy.

We begin with the BTS estimate of motor fuel use for each state for 2005.40 We inflate this figure using the annual percentage change in the EIA estimate for U.S. energy consumption for motor fuels.41 We then estimate the amount of ethanol consumption in Wisconsin by inflating

the EIA estimate for 2005 by the estimated increase in U.S. ethanol consumption for 2006 to 2011.42 We next calculated the total British Thermal Units (BTUs) that our predicted consumption ethanol would produce using the BTU per gallon figures from the EIA.43 Since E85 would be replacing gasoline consumption, and E85 provides fewer BTUs per gallon and thus less mileage per gallon, Wisconsin drivers would need to purchase more gallons of E85 to drive the same amount of miles as under the current consumption of gasoline. We estimate that one gallon of ethanol provides 67% of the BTU content of one gallon of gasoline, or that one gallon of gasoline provides the equivalent energy of 1.493 gallons of ethanol.

Using the figures above, we calculated the number of gallons of ethanol that would be consumed in Wisconsin. In order to estimate the number of E85 gallons sold per station, we assume that E85 consumption is evenly distributed throughout the existing 61 stations. Under this assumption, each station sells 43,161 gallons of E85 per year. We also assume that the number of gallons of E85 sold per station is constant, regardless of the number of stations. Therefore, total E85 consumption would rise to 28.8 million gallons [43,161 x 439 x 1.493 = 28,290]. With a subsidy equal to the tax on E85, the total cost of this tax subsidy would be $9.304 million.

Therefore, the total cost of all subsidies to the taxpayer would be $23.3 million. We assume the subsidies would be funded through the general fund and thus would require taxes to increase. We increased all state taxes in proportion to their share of current state revenues in the WI-STAMP model.

Government Fleet Adoption of Plug-in Hybrid Electric Vehicles

The adoption of plug-in hybrid electric vehicle purchases intends to aid the achievement of Gov. Doyle's goal for the state of Wisconsin to derive 25% of its electricity and 25% of its transportation fuels from renewable sources by the year 2025.44 The policy would require 25% of state and municipal government (with a population over 100,000) delivery vehicles, light trucks and passenger cars to have plug-in hybrid electric drive trains by 2012. The policy also recommends the state classify electricity as a transportation fuel.

The GTF estimates that the policy would save between 314 and 1,584 metric tons of CO2 and cost the state and municipalities $14 million, with additional federal funding expected under the Energy Independence and Security Act of 2007. BHI modeled the policy as an increase in vehicle fees of $14 million.

Low GHG Fuel Standard

The GTF seeks to reduce life-cycle carbon emissions from transportation fuels through the implementation of a Low Carbon Fuel Standard (LCFS) policy. Under the policy, fuel providers in Wisconsin (producers, importers, refiners and blenders) would be required to sell products with a declining greenhouse gas emissions profile measured in CO2-equivalent gram per unit of fuel energy (BTUs) measured on a life-cycle basis in order to capture all emissions from the production and consumption. The GTF calls a 10% emissions reduction by 2020 "realistic given the policies in place at the state and federal level."45

GTF projects in its baseline that transportation fuel could be generating 40-43 million metric tons (MMt) CO2 by 2020 and 43.2-50.4 MMtCO2 by 2030 from on- and off-road sources; and that a 10% standard could reduce 2020 emissions by 4.0-4.3 MMtCO2 per year.46

GTF provides no estimate of the costs of or savings from the LCFS recommendation. However, an analysis of a similar proposal at the national level indicates that the 10% reduction could only be achieved at the cost of a large reduction in the consumption of energy from transportation fuels. In other words, employees of Wisconsin firms and businesses would have to drive fewer miles, and thus consume less fuel. BHI provides estimates through 2020 below.

Today, and for the foreseeable future, ethanol, biodiesel and ethanol are the only practical realistic alternatives to gasoline and diesel. Vehicles powered by hydrogen and electricity (plug-in vehicles) are not cost competitive and are unlikely to become so by 2020. This leaves ethanol and biodiesel as the only practical alternative fuels.

Ethanol and biodiesel are cost competitive with gasoline or diesel fuel on a per gallon basis, but they produce less energy than gasoline and diesel. This lower energy concentration translates into a lower driving mileage per gallon for ethanol relative to gasoline and diesel. As a result, ethanol and biodiesel become more expensive to use than gasoline or diesel.

In order to estimate the costs of the proposal, we begin with the BTS estimate of motor fuel use for each state for 2005.47 We inflate this figure through 2020 using the annual percentage change in the EIA estimate for U.S. energy consumption for motor fuels.48 We then estimate the amount of ethanol and biodiesel consumption in Wisconsin 2008-2020 by inflating the EIA estimate for 2005 by the estimated increase in U.S. ethanol consumption for 2006 to 2011.49 The ethanol projection is then subtracted from the gasoline projection for each year since the gasoline figure includes ethanol, according to a note in the EIA table. We next calculated the total BTUs that our predicted consumption of gasoline and ethanol combined would produce for each year, using the BTU per gallon figures from the EIA.50

We calculated the number of gallons of ethanol that would be consumed in Wisconsin to reach the percentage set by the GTF, while keeping the number of BTUs constant with our projected mix of gasoline and ethanol. Holding BTUs constant allows Wisconsin's consumers and businesses to drive the same number of vehicle miles traveled relative to the baseline. This is not straightforward, since every new gallon of ethanol produces fewer BTUs than the gallon of gasoline it replaces. Thus, if we were simply to replace gasoline, gallon for gallon, with ethanol, drivers would not be able to travel the same distance as before. To complete the calculation we utilize the Microsoft EXCEL "solver" utility. Solver allows us to compute the number of gallons of ethanol and gasoline that would satisfy the GTF goal, while keeping the total number of BTUs generated from both unchanged from the initial calculation. This calculation is performed for each year.

Finally, we calculated the dollar cost of the new mix of gasoline and ethanol consumption in Wisconsin. We used EIA projections for gasoline and ethanol prices to calculate the difference.51

A 10% GHG emissions reduction would require a complete switchover to ethanol and increases costs in Wisconsin an additional $3.279 billion by 2020. More important, Wisconsin drivers would need to cut transportation fuel consumption by the equivalent of 227.10 million gallons of gasoline. In other words, the 10% GHG emissions reduction by 2020 is unattainable without contracting the use of motor vehicle transportation in Wisconsin.

Our preferred calculation made under the assumption that BTUs are held constant relative to the baseline, as indicated above, shows that GHG emissions would only drop by 1.5%. This would also require the state to completely switch to ethanol, consuming 4.344 billion gallons of ethanol at an increased cost of $4.731 billion.

To simulate the implementation of the proposal, we increased the price index for the transportation sector in WI-STAMP by 26.48% against the baseline.

Each of the GTF proposals consists of either imposing a tax or a fee onto the purchase of a product, such as a vehicle surcharge, or increasing the purchase and use of products, such as biofuels, that emit fewer greenhouse gases. BHI used the WI-STAMP model to measure the changes to the Wisconsin economy that would take place as a result of the GTF recommendations. Each estimate represents the change that would take place in the indicated variable against a "baseline" scenario of no policy change.

Table 7 presents the results from the WI-STAMP to the policy changes specified above. The first row includes all policies except for the cap-and-trade policy, which was modeled separately. The private sector would shed 43,093 jobs by 2020, a consequence of the higher prices and taxes that consumers and firms face, which will cause them to reduce their investment and consumption. The increase in state government revenue would allow the public sector to add 12,380 jobs. In total, the measures would eliminate a net of 30,713 Wisconsin jobs.

, 2020

Policy	*Employment*		*Real Disposable Income*	*Per Capita Disposable Income*	*Annual Real Gross Wage Rate*	*Gross Private Domestic Investment*
	Private	*Public*	*($ million)*	*($/per person)*	*($ million)*	*($ million)*
All Policies	-43,093	12,380	-7,908	-1,012	-1,596	-619
Cap-and-Trade	-25,767	6,716	-1,836	-150	-$495	-561

The annual wage rate would drop by $1,596 per worker per year. Wisconsin workers would face higher utility prices and taxes, which in turn would increase their cost of living. However, the

increase in unemployment would, in turn, put downward pressure on household wage demands. Thus workers' real, or inflation-adjusted, wages would drop significantly.

The combination of higher energy prices and lower employment under the GTF proposals would reduce incomes in Wisconsin. Real disposable income would fall by $7.908 billion in 2020. This translates into a loss of $1,012 in real disposable income per capita.

The higher cost of energy would hurt firms' profit margins, causing them to reduce investment in Wisconsin. We estimate that investment would drop by $619 million in 2020, with the utility sector accounting for the largest portion of the decrease.

Cap-and-Trade Policy

The second row in Table 7 presents the changes to the different economic indicators and to the state and local governments' funds caused by implementing a possible cap-and-trade system.

The cap-and-trade system, absent the other policies, would produce the most damage to the Wisconsin economy of any single policy reviewed. BHI modeled an average price increase resulting from estimates produced by the NAM for a high and low cap-and-trade scenario. Here we modeled the consequences of the average of the minimum and maximum price increases that were reported by NAM.52

As a result, the state economy would shed 19,051 jobs in 2020. The private sector would absorb the brunt of the job losses, as energy and transportation price increases push up the cost of doing business in the state. Some firms would react by cutting back on production and subsequently payrolls; others would relocate to a lower-cost (foreign) production site; and yet others, no longer able to compete, would simply shut their doors. The substitution of production to sources outside Wisconsin would negatively affect investment levels and the state capital stock, causing investment to fall by $561 million in 2020.

Price increases under cap-and-trade would also cause real or price-adjusted disposable income to drop by $1,836 million, meaning all 2.22 million households would lose $150 per year.

Effects on the Paper Industry

Since the establishment of The Milwaukee Sentinel and Gazette in 1848, before the state entered the union, Wisconsin has figured prominently in the production of paper. Today, Wisconsin leads the nation in papermaking, producing more than 5.3 million tons of paper and 1.1 million tons of paperboard annually valued at over $12 billion.53 In 2007, the industry employed over 33,000 workers and paid $1.9 billion in salaries and wages.54

The manufacturing process used in the paper industry is very energy intensive, using over 115 trillion British Thermal Units of energy each year. While it has made incredible strides in deriving 24% of its energy needs from recycled and renewable sources, such as waste wood, the state's paper industry still derives 75% of its energy needs from fossil fuels (coal 35%, natural

gas 22% and electricity 13%, with propane and fuel oil making up the other 5%).55 Thus, the industry is particularly vulnerable to increases in energy prices, whether those prices are market or policy driven, as would be the case if GTF recommendations were applied.

The industry also faces the twin challenges of intense international competition and higher energy prices, which have forced the closing of several plants in recent years. Wisconsin has already suffered the closing of nearly a dozen paper mills and the loss of about 16,000 (roughly a third) of its papermaking jobs since 1997.56 We estimate that under the 12 GTF policies, Wisconsin's paper industry would lose 1,492 jobs, and investment in the sector would drop by $594,263 by 2020.

Under the cap-and-trade policy the paper industry would lose 1,934 jobs and experience a fall in investment equal to $772,005 by 2020. Under the other policies, the industry would shed 3,496 jobs and $1.8 million in net investment. These negative effects would result from the combination of mills closing in Wisconsin and others moving to lower-cost areas that do not incur these increased costs.

International competition from developing countries, especially China, has contributed to the paper mill closings in Wisconsin. Paper producers in these countries not only face lower labor and capital costs, but also face much less onerous environmental regulations than their Wisconsin competitors. Moreover, the GTF recommendations would exacerbate the competitive disadvantage that the paper industry faces from producers in developing countries. The GTF-inflicted cost increases could strike a fatal blow to the already weakened local paper industry.

Conclusion

In its draft final report, GTF offered recommendations for reducing GHG emissions covering several sectors of the state economy. The GTF proposes the use of less-efficient and costly renewable energy sources as well as public funding for untested programs to promote energy efficiency.

GTF acknowledges that the implementation of these measures would likely increase costs in the utility and transportation sectors.57 In addition, the state would need to raise additional revenues or divert resources from current programs to fund many of the GTF initiatives. At the same time, the GTF is uncertain that many of these new programs would lead to improvements in efficiency that would offset the increased prices at some undetermined date in the future. Meanwhile, the Wisconsin business community would see a reduction in its competitive advantage over states that resist the pressure to adopt similar legislation.

The GTF study suggests a goal of a 22% reduction in Wisconsin emissions below the 2005 levels by 2022. The attainment of this goal would cost the Wisconsin economy jobs, investment and income, especially if Wisconsin pursues them in the absence of a national policy. Moreover, the struggling paper manufacturing industry would be especially hurt by the policies since it is very energy intensive and is vulnerable to energy price increases.

If the Wisconsin Legislature is to consider the GTF proposals, it should give considerable thought to their likely economic consequences.

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