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ANDERSON ECONOMIC GROUP

Northeast Blackout Likely to Reduce US Earnings by $6.4 Billion

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INTRODUCTION

On Thursday, August 14, 2003, an electrical disruption caused a loss of electrical service to consumers and industry across the Northeast. The states that were directly affected by the blackout were:

- New York
- Michigan
- Ohio
- Pennsylvania
- New Jersey
- Connecticut
- Vermont
- Massachusetts

In addition, substantial parts of the Canadian province of Ontario, which is connected to the US power grid, were also affected. In total, about 50 million US residents lost electrical power. Many also lost water service, and still more found it difficult or impossible to get gasoline for automobiles and trucks.

This working paper summarizes the economic effects of the blackout on residents of the United States.

METHODOLOGY

We have previously estimated the net economic impact of numerous events. These include the 1998 GM strike, the 2002 West Coast Port Shutdown, and projects ranging from new power plants and industrial facilities to new casinos.

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Our analysis uses a consistent, conservative methodology that avoids double-counting of costs or benefits, properly accounts for the shifting and substitution of economic activity, and does not unnecessarily inflate the impact by using excessive "multipliers." Unfortunately, many "economic impact" reports do not follow a consistent methodology nor a conservative approach, and we caution against comparing the results from this analysis with "impact" assessments produced largely for public relations purposes, or to gain support for taxpayer assistance or government designations.[1]

SUMMARY OF EFFECTS

The total impact on US workers, consumers, and taxpayers will be a loss of approximately $6.4 billion, due directly to the effects of the electric power blackout that hit the Northeast United States and portions of Canada on the afternoon of August 14, 2002. This analysis was based on a blackout lasting from one to three days and covering parts of 8 states, and includes only actual losses to US persons.

- Workers and investors lost $4.2 billion in income, due to reductions in wage and salary earnings and profits.[2] This is the largest source of the overall economic loss.

  As in all disruptions, people minimized the negative effects by, where possible, shifting production or consumption, and substituting one item for another. Our estimate is for the *net* impact, after reductions for substitution effects.
- The impact was minimized because it started late on Thursday afternoon. If it had occurred on a Monday or Tuesday morning, the lost production would have probably been twice as high.
- Consumers and Industry also lost between $380 million and $.94 billion in goods due to spoilage or waste. The largest portion of this loss was in perishable foods.

  We did not include any estimate of property damage due to illegal behavior, and it seems that there were relatively few incidents of looting during the blackout.

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1. Previous AEG reports that discuss proper methodology include:

Critical Review: Gun Lake Band of Potowattami Indians Environmental Impact Study; Economic and Community Impact Analysis, Lansing, MI: Anderson Economic Group, February 2003 (also available from the Grand Rapids Area Chamber of Commerce); *Lost Earnings Due to the West Coast Port Shutdown - Preliminary Estimate,* Lansing, MI: Anderson Economic Working Paper, October 7, 2002.

These are available on the Anderson Economic Group web site at: http://www.andersoneconomicgroup.com.

2. To avoid double-counting, we evaluate lost production, but only count lost earnings to US persons.

- Government agencies and their taxpayers will bear a significant cost in additional police and emergency service costs, much of which will take away from already-strained budgets and mean less revenue for other programs. We estimate this net cost at between $15 and $100 million.[1]

  While this means short-term earnings increases for these employees, much of this expenditure will be shifted away from other employees, meaning a net loss in earnings and poorer service to city residents.
- The electric power industry and their ratepayers will also bear considerable expenses in overtime and repair costs, and will likely have to retro-fit existing facilities to prevent the cascading-blackout effect that occurred this time. The costs of complete replacements of transmission facilities should not be included in the impact of the blackout, although the repair, patching, and emergency service costs should be included. We estimate that ratepayers and utility shareholders will absorb between $1 billion and $2 billion in costs over the next year for the repairs, patching the system, and other extra costs due to the blackout. We did not estimate the cost of the ultimate replacements and improvements of facilities that will certainly be required in some or all of the country.
- Any material savings in lost energy consumption was offset by additional energy costs due to inefficient production, additional trips, and other factors.
- The lost earnings for workers and investors should be added to the spoiled goods, and the extra expenditures of governments and utility companies, to arrive at a total economic loss due to the blackout. We estimate this to be in the range of $4.5 to $8.2 billion. For a point estimate, we estimate the total cost to be $6.4 billion, the mid-point of this range.

For details of the analyses, see Tables I through III.

STATE-BY-STATE IMPACT

We allocated the total impact—including lost earnings as well as spoiled goods and higher electrical costs—across all affected states. As states outside the blackout area also suffered some indirect effect, and will also bear some of the repair costs, a portion of these costs were allocated to them. The hardest hit states were New York, Michigan, Ohio, and New Jersey in order. For detailed analysis, see Table III, Impact of the August 2003 Blackout, Ranked by State.

COMPARISON WITH PAST DISRUPTIONS

We previously evaluated other major strikes, shutdowns, and disruptions. Anderson compared the impact of the 2003 blackout with the 1998 GM strike and the 2002 Port Shutdown. The Anderson Economic Group estimate of the lost earnings due to the Port Shutdown, published October 15, 2002 and avail-

1. Again, to avoid double counting we include only the additional spending by state and local governments that does not translate into additional services. Overtime workers maintaining order and providing emergency assistance are expensive and provide little lasting benefits.

able on the company's web site, was approximately $1.67 billion, for a period of 12 days covering the shutdown. A later review of economic statistics for regions across the country, including the "beige book" data released by the Federal Reserve Board, confirmed that this was an accurate estimate of the magnitude of the shutdown's effect.

AEG also analyzed the 1998 GM strike, which shut down production in many states. A later review of tax revenue and employment figures for the state of Michigan indicated that the original AEG estimate was slightly smaller than the actual impact. Adjusting for this and projecting the impact nationally, including allotting the GM profit loss (less increased profits to other US automakers) the 1998 GM strike would have had an impact of approximately $2.7 billion.[1]

Thus, the 2003 blackout was probably over four times as damaging as last year's port shutdown, and twice as damaging as the 1998 GM strike. The reason for the higher damage figure is that the blackout shut down production across multiple states, rather than causing sporadic shortages and disruption in certain industries (as did the port shutdown). The GM strike also shut down production, although the impact was confined to a few (though very large and important) industries.

NO LASTING DAMAGE FORESEEN

There is no lasting damage to the US economy, given the information available today, which was based on the assumption of no fundamental flaws in the US and Canadian power grids. U.S. residents lose earnings in 2003, and pay higher electric rates in the future to pay for repairs, but there is nothing here that would indicate the US economy as a whole will sustain lasting damage. A $6 billion loss is about 1/10 of 1% of the US $10.7 trillion GDP, meaning that the blackout will hurt growth for about two quarters, but not trigger a recession.

APPENDIX TABLES

Table A-1 shows our calculation of lost earnings by state. This was based on initial analysis within the first 20 hours after the shutdown, and a review after all power was restored. We note our estimates of individual states are based on reported information as of this time, and are less precise than our estimate of the overall impact.

We used 2001 GSP data as a base year. 2002 GSP data are estimated based on the national GDP. 2003 GSP data are AEG projections based on the reported second quarter GDP. To calculate lost earnings, we use average ratio of earnings to GSP.

1. This figure is presented for comparison, as we did not complete a state-by-state analysis in 1998.

Table A-2 shows ratios and assumptions we use in Table A-1. Total lost earnings are estimated for the first, second, and third day of the blackout separately. In Table A-1, only the sum of three days is shown. Only two states have third day lost earnings, New York and Michigan; whereas, the State of Vermont has only first day of lost earnings.

Table A-3 shows our analysis of lost or spoiled commodities. According to US Census, grocery store inventories at the end of June 2003 sum up to 38 billion dollars in the U.S., which means 7 to 9 billion dollars of inventories in the Northeast. By assuming 5 to 10 per cent spoilage rate, we estimated 375 to 939 million dollars cost to industrial and residential consumers.

ABOUT ANDERSON ECONOMIC GROUP

Anderson Economic Group specializes in regional economics and market studies. AEG's past clients include governments such as the states of Michigan, North Carolina, and Wisconsin, the cities of Norfolk, VA, Fort Wayne IN, and Detroit, MI, and the Port Authority of Detroit-Wayne County; corporations such as GM, SBC, and Labatt USA; and nonprofits, such as the International Mass Retailers Association, American Automobile Manufacturers Association, and Michigan Catholic Conference. For additional information, see the AEG web site at: http://www.andersoneconomicgroup.com.

In addition to Patrick Anderson and Ilhan Geckil, Vlad Hlasny and Karan Singh contributed to this report.

Preliminary Estimate: Economic Impact of a 1-to-3 day Blackout In Northeast U.S., August 2003

Table I. Workers & Investors (Lost Earnings)

			Total Lost Earnings (in billions)
Michigan			$ 0.653
New York			$ 1.980
New Jersey			$ 0.263
Ohio			$ 0.358
Pennsylvania			$ 0.147
Connecticut			$ 0.060
Vemont			$ 0.002
Massachusetts			$ 0.003
Total Direct			**$ 3.465**
Indirect Effect	*multiplier:*	*0.20*	$ 0.693
Total Lost Earnings			**$ 4.159**

Table II. Total Economic Impact

	Low Estimate (in billions)	High Estimate (in billions)
Lost Earnings (including indirect effect), see Table I	$ 3.12	$ 5.20
Cost to Industrial & Residential Consumers (lost or spoiled commodities	$ 0.38	$ 0.94
Cost to Government (Net Cost)	$ 0.02	$ 0.10
Cost to Power Industry *	$ 1.00	$ 2.00
Net Change in Energy Consumption During Backout	$ 0.00	$ 0.00
Total Economic Impact	**$ 4.51**	**$ 8.24**
mid-point estimate	**$**	**6.4**

** Base-level guess before diagnostic info available; includes repairs but not new facilities.*

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Table III. Impact of the August 2003 Blackout, Ranked by State

Rank	States	Direct Effect, Lost Earnings (in billions)	Indirect Effect, Lost Earnings (in billions)	Cost to Industrial & Residential Consumers, Spoiled Commodities (in billions)	Net Cost to Government (in billions)	Cost to Power Industry (in billions)	Total Economic Impact (in billions)
1	New York	$ 1.980	$ 0.198	$ 0.375	$ 0.033	$ 0.429	$ 3.015
2	Michigan	$ 0.653	$ 0.065	$ 0.124	$ 0.011	$ 0.141	$ 0.994
3	Ohio	$ 0.358	$ 0.036	$ 0.068	$ 0.006	$ 0.078	$ 0.545
4	New Jersey	$ 0.263	$ 0.026	$ 0.050	$ 0.004	$ 0.057	$ 0.400
5	Pennsylvania	$ 0.147	$ 0.015	$ 0.028	$ 0.002	$ 0.032	$ 0.223
6	Connecticut	$ 0.060	$ 0.006	$ 0.011	$ 0.001	$ 0.013	$ 0.091
7	Massachusetts	$ 0.003	$ 0.000	$ 0.001	$ 0.000	$ 0.001	$ 0.005
8	Vermont	$ 0.002	$ 0.000	$ 0.000	$ 0.000	$ 0.000	$ 0.003
#	All others	$ -	$ 0.347	$ -	$ -	$ 0.750	$ 1.097
#	**Total**	**$ 3.465**	**$ 0.693**	**$ 0.657**	**$ 0.058**	**$ 1.500**	**$ 6.373**

Input Data: Preliminary Economic Impact of a 1-to-3 day Blackout In Northeast U.S., 2003

Table A-1. Workers & Investors (Lost Earnings), Direct Effect

	State GSP (2001), Base Year (billions)	State GSP (2002), estimate (billions)	State GSP (2003) (billions)	1-day GSP (billions)	Earnings (billions)	Total Lost Earnings * (billions)	Fraction Affected Day 1	Fraction Affected Day 2	Fraction Affected Day 3
Michigan	$ 320.5	$ 332.0	$ 351.0	$ 1.0	$ 0.8	$ 0.7	*40.0%*	*40.0%*	*5.0%*
New York	$ 826.5	$ 856.3	$ 905.2	$ 2.5	$ 2.0	$ 2.0	*40.0%*	*40.0%*	*20.0%*
New Jersey	$ 365.4	$ 378.6	$ 400.2	$ 1.1	$ 0.9	$ 0.3	*25.0%*	*5.0%*	*0.0%*
Ohio	$ 373.7	$ 387.2	$ 409.3	$ 1.1	$ 0.9	$ 0.4	*25.0%*	*15.0%*	*0.0%*
Pennsylvania	$ 408.4	$ 423.1	$ 447.3	$ 1.2	$ 1.0	$ 0.1	*10.0%*	*5.0%*	*0.0%*
Connecticut	$ 166.2	$ 172.2	$ 182.0	$ 0.5	$ 0.4	$ 0.1	*10.0%*	*5.0%*	*0.0%*
Vermont	$ 19.1	$ 19.8	$ 21.0	$ 0.1	$ 0.0	$ 0.0	*5.0%*	*0.0%*	*0.0%*
Massachusetts	$ 287.8	$ 298.2	$ 315.2	$ 0.9	$ 0.7	$ 0.0	*0.5%*	*0.0%*	*0.0%*
Total	**$ 2,767.5**	**$ 2,867.5**	**$ 3,031.1**	**$ 8.3**	**$ 6.6**	**$ 3.5**			
Sources:	*BEA*	*BEA & AEG Est.*	*AEG Projection*	*BEA & AEG*	*BEA & AEG*	*AEG*			

Table A-2. Ratios & Assumptions

Annual Rate of Change of GDP of the US (2001-2002):	3.61%
Sources: BEA & AEG	
Annual Rate of Change of GDP of the US (2002-2003):	5.71%
Sources: AEG Projection	
Ratio of earnings to GSP:	79.8%
Sources: BEA & AEG	

Table A-3. Lost or Spoiled Commodities

	June 2003 (projected, in millions) Low Estimate	High Estimate
Food & Beverage Store Inventories, US	$ 41,644	$ 41,644
Grocery Store Inventories, US	$ 37,544	$ 37,544
Portion of the US in the Northeast	20%	25%
Estimated Grocery Store Inventories in the Northeast	$ 7,509	$ 9,386
Assumed Spoilage Rate	5%	10%
Value of Spoiled Inventories	**$ 375.4**	**$ 938.6**
Sources:	*U.S. Census Bureau, Unadjusted and Adjusted Estimates of Monthly Retail and Food Services*	

Sources: Anderson Economic Group, LLC; U.S. Department of Commerce, Bureau of Economic Analysis; NBER; U.S.Census Bureau