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BEFORE THE
OHIO POWER SITING BOARD

In the Matter of the Application of American Municipal Power-Ohio, Inc., for a Certificate of Environmental Compatibility and Public Need for an Electric Generation Station and Related Facilities in Meigs County, Ohio.	))))))	**Case No. 06-1358-EL-BGN**

DIRECT TESTIMONY OF IVAN CLARK

1 Q. Please state your name and business address.

A. My name is Ivan Clark. My business address is 1801 California Street, Suite 2800, Denver, Colorado 80202.

2 Q. By whom are you employed, and what is your position?

A. I am employed by R. W. Beck, Inc. ("R. W. Beck") as a Principal and Senior Director.

3 Q. Please describe your duties and responsibilities in that position.

A. As Principal and Senior Director, my responsibilities include project management and technical review for planning and licensing of electric generation and transmission projects for R. W. Beck's clients throughout the U.S. and various foreign countries. In this position, I manage and coordinate project teams and evaluate technical issues with respect to new and existing generation and transmission facilities. This includes feasibility studies, construction contracting, construction monitoring, and operations reviews.

4 Q. Please describe your educational background and professional experience.

A. I have a Bachelor of Science degree in Electrical Engineering from Kansas State University (1970). I have 32 years of experience with R.W. Beck managing and coordinating a broad range of projects. I previously worked for Commonwealth Edison Company from 1971 to 1975. My experience at R.W. Beck includes:

- Project Manager for Owner's Engineering services for AMP-Ohio's AMPGS Project.
- Project Manager for Owner's Advisory services for Missouri Joint Municipal Electric Utility Commission and Municipal Energy Agency of Mississippi who are participants in the 658 MW Plum Point coal project in Arkansas, including review of participant agreements, technical review of construction and development plans, development of project operating results and construction monitoring.
- Project Manager for technical review and evaluation of emission control retrofit options for AMP-Ohio's Gorsuch Generating Station.
- Project Manager for evaluations of emission control options for Rochester Public Utilities 60 MW Silver Lake Generating Station Unit 4 and follow-up technical and cost review of the selected development option.
- Project Manager for development planning and licensing for the 520 MW Towantic Energy Project in Oxford, CT for Arena Capital LLC and Calpine Eastern Corporation.
- Project Manager for Technology Evaluation Study for a nominal 500 MW coal fired power plant for Michigan Public Power Agency, including evaluation and comparison of PC, CFB and IGCC technologies.
- Project Manager for site selection studies and licensing for the 980 MW Wilson Generation in Kentucky for Big Rivers Electric Corporation.

5 Q. Do you have any professional licenses?

A. Yes

6 Q. What are they?

A. I am licensed in the States of Ohio, Colorado, Kentucky, and Florida as a Professional Engineer.

7 Q. Please describe the nature and scope of R. W. Beck, Inc.'s business?

A. R. W. Beck, Inc. provides a broad range of engineering, planning, management consulting, and operational analysis for the energy, water, wastewater, and solid waste industries. With more than 60 years of industry experience and a staff of 500 professionals, the firm has grown to international scope offering electric generation clients assistance with initial planning through the steps of engineering and economic feasibility, consultation for project financing, environmental licensing, design review and construction engineering, operational analysis, and continuing consultation to management.

8 Q. What is R. W. Beck's role in planning the development of the AMPGS Project?

A. R. W. Beck is providing power supply planning services; project feasibility review; Engineering-Procurement Construction ("EPC") Contract Request for Proposal ("RFP") preparation; EPC Proposal evaluation; EPC Contract negotiation assistance; Project financing technical support; construction monitoring; test and start-up monitoring; and initial Project operation review.

9 Q. Are you familiar with AMP-Ohio's Application, as supplemented, for a Certificate of Environmental Compatibility and Public Need for an Electric Generation Station and Related Facilities in Meigs County, Ohio ("Application")?

A. Yes

10 Q. Are you familiar with the contents of that Application?

A. Yes, generally.

11 Q. Did you participate in the completion of that Application?

A. Yes. I participated in a review of the Application to confirm that it was consistent with the latest Project development plans and feasibility evaluations along with the EPC RFP specifications.

12 Q. Did R. W. Beck undertake an analysis of AMP-Ohio's Members' Base Load Power requirements?

A. Yes.

13 Q. Please describe that study and its results.

A. That study, completed in May of 2007 and updated in October of 2007, looked at the individual power supply needs of the then 119 AMP-Ohio Members and provided an optimized resource selection based on a long-term, 20 year, view. The power supply plan for each individual Member was evaluated and based on evaluation results an optimal power supply strategy was selected (taking into account the amount, timing, and mix of resource additions) that minimizes the total net present value of power supply costs and risks over the 20 year study period. The study assumed a CO_2 emission allowance value of $10 per ton of CO_2 emissions (in 2006 dollars), beginning in the 2012 through 2018

timeframe and continuing thereafter. To account for the uncertainty in the timing of CO_2 regulations, a probability was assigned to each year for CO_2 regulation beginning in 2012 until 2018 when a regulatory scheme for CO_2 would likely be fully in place.

The study identified a need for over 2,000 MW of base load generation for AMP-Ohio's Members and recommended pursuing approximately 1,500 MW of coal-fired generation and 500 MW of hydroelectric generation to fill that need.

As an update to the power supply studies, a beneficial use analysis for each AMP-Ohio Member that is a project participant ("Participant") was also conducted to determine if each Participant could effectively utilize their selected share of the AMPGS Project taking account the amount of load the AMPGS Project share would serve, the impact of the AMPGS Project on projected surplus energy and projected power costs before and after AMPGS. Results of that analysis demonstrated that the power supply costs with the AMPGS Project during the next 20 years would be lower than existing power supply arrangements.

14 Q. As a part of your engagement with AMP-Ohio, did you review the reasons AMP-Ohio chose to construct AMPGS?

A. Yes. It was because of difficult power supply availability in wholesale markets, constrained transmission access, and volatile prices adversely and materially impacting AMP-Ohio's ability to provide its Members with reliable, cost-effective, and cost-predictable power supply. As a result, construction of a reliable, cost-effective, and cost-predictable source of base load power to AMP-Ohio's Members was necessary.

15 Q. As part of its work, has R. W. Beck reviewed the status of coal-fired generation in the United States?

A. Yes

16 Q. Please summarize your findings.

A. Please refer to Exhibits IC-1, 2, 3, and 4 which have been prepared based on information from the Energy Information Administration ("EIA"). These exhibits illustrate some of the current electric generation fundamentals in the U.S. Exhibit IC-1 is a state-by-state summary of average retail costs in cents per kilowatt-hour. Also, the map identifies the percentages of total electric generation that is produced by coal-fired power plants for the year 2006. As shown in the Exhibit, the low cost of coal dramatically impacts the cost of electricity. From a low of 5.5 per kilowatt hour ("kWh") cents in Kentucky, where 92 percent of generation comes from coal, to a high of 20.7 cents per kWh in Hawaii where only 13 percent of generation comes from coal. For the State of Ohio, the percentage of coal generation is 86 percent and the average retail power cost for the year 2006 is shown as 7.71 cents per kWh.

Exhibit IC-2 provides a breakdown of the nationwide electric generation capacity by fuel type (i.e. coal, nuclear, natural gas, renewables, and oil). At the end of 2005, the nation's total installed generating capacity was around 988,000 megawatts, with coal-fired generation comprising about 32 percent of the total capacity, 10 percent from nuclear, with gas-fired generation comprising 41 percent, 13 percent from renewable sources and 4 percent from oil. As noted on this Exhibit, while coal is only 32 percent of the total capacity the energy production from coal-fired generation facilities was more than 50 percent of electric consumption in 2005.

Exhibit IC-3 provides a categorization of the nationwide coal-fired electric generation by unit age. As can be seen from the Exhibit, the coal fleet is already very old and is getting older. More then 50 percent of existing units are over 40 years old, approximately 70 percent are more than 30 years old, and 29 percent are over 50 years of age.

Exhibit IC-4 illustrates the cost of electricity ($2005/MMBtu) as generated by fuel type (natural gas, coal, and nuclear) during the past 10 years and projected to 2030. Compared to other energy resources, natural gas and nuclear, coal averages about $1.64 per MMBtu

based on 2005 dollars over the period 2006 to 2030 as reported by EIA, which is more than nuclear, and is much less than natural gas. Natural gas prices, as reported by EIA, show prices per MMBtu hovering well into the $5 to $7 range based on 2005 dollars over the period 2006 to 2030. The stable economics behind coal fuel costs show that it is a viable alternative in the long-term.

17 Q. Is electric demand, in both capacity and energy, expected to increase?

A. Yes, we project AMP-Ohio Member demand to increase 1.75% per year. Electric demand in the United States has been projected to increase in the 40 percent range by 2030. See, for example, a recent Electric Power Research Institute projection attached as Exhibit IC-5 and a recent Carnegie Mellon Electric Industry Center projection given by Jan Apt of Carnegie Mellon University, see Exhibit IC-6.

18 Q. What conclusions can be drawn from that data?

A. The exhibits generally support the following conclusions:

1. The State of Ohio relies heavily on coal-fired generation to supply the electric needs of the citizens and businesses in the state.
2. Coal-fired generation is a substantial portion of the nation's electric generation capacity and energy supply, the latter being more than 50 percent of the total electrical consumption.
3. The aging fleet of coal-fired generation units is a fundamental issue that needs to be addressed now, when one considers the long timeframes that are required to construct new generation facilities.
4. Long-range electric generation additions required to meet regional and nationwide needs and to replace aging generators will likely depend on new coal, new natural gas, and new nuclear capacity in order to maintain reasonable electric rates. Replacement of the aging coal fleet with more efficient coal baseload units will provide efficiency benefits, which will be important in reducing carbon dioxide emissions.

19 Q. Based on your experience, education, and knowledge of the Application, and in your opinion, is the AMPGS consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems?

A. Yes, I agree with Witness Kiesewetter's conclusions in that regard. Additionally, I would refer to the recently issued North American Electric Reliability Counsel's ("NERC") 2007 Long-Term Reliability Assessment. Overall, Finding 1 on page 8 of that report states:

> Electric capacity margins continue to decline – action is needed to avoid shortage. Overall, committed capacity margins improved by approximately two percent in the U.S. over the last year, but margins in some areas decreased. Several areas established forward capacity market, which will be relied upon to provide the necessary, new resources to maintain reliability.

Specifically, with regard to the Reliability *First* RFC region, which includes Ohio, Michigan, Pennsylvania, West Virginia and parts of Virginia, the report forecasts a need for over 11,000 MW of new generation in RFC by 2016 to maintain adequate capacity resources. NERC goes on to state that "[t]here is currently no certainty with the location and ownership of these required resources." AMPGS will satisfy a portion of that significant need. I have attached as Exhibit IC-7, a copy of the RFC Reliability Assessment Highlights from that NERC report.

20 Q. Based on your experience, education, and knowledge of the Application, and in your opinion, will the AMPGS serve the interests of the electric system economy and reliability?

A. Yes, again I concur with Witness Kiesewetter.

21 Q. Are you familiar with the estimated costs to construct the AMPGS?

A. Yes

22 Q. Did R. W. Beck conduct any costs analyses for the AMPGS?

A. Yes.

23 Q. What were the results of these analyses?

A. R. W. Beck estimated the Project's total capital cost at $2,532,780,000, excluding interest during construction and financing costs. This estimate was based on Project details developed for the Project by Sargent & Lundy as part of the conceptual design, vendors quotations for large equipment items, and cost information from R. W. Beck's proprietary data base of similar projects. Exhibit IC-8 summarizes the Project's capital cost estimate.

After adding the estimated costs for interest during construction, reserves and financing costs for the Project, the total amount of bonds required to finance the Project is estimated at $2.912 billion. Based on this total amount, the Project's cost per kW is $2,950.

Fixed operating costs for the Project in 2007 dollars were estimated at $28.00 per kW-year (2007 dollars) which includes costs for an operating workforce of approximately 146 personnel. This was escalated to 2013 dollars and is equivalent to $5.18 per MWh.

Total variable operating costs including fuel, auxiliary fuel, Powerspan emission control process costs, urea, water treatment chemicals, emission allowances (NOx, SO_2, and Hg) and other variable expenses total an approximate $26.84 per MWh ($2013). This value assumes both units operate at 85 percent capacity factor for the whole year. The delivered fuel cost in this amount is based on a blend of eastern bituminous coals and estimated at $19.94 per MWh.

Total annual operating costs, including fuel for the initial three years of operation (2013, 2014 and 2015) are shown in Exhibit IC-9, excluding any requirements for CO_2 emission allowances.

24 Q. Based on your previous response on Project costs what is the projected power cost for the Project to AMP-Ohio participating Members?

A. The projected power cost to Participants, including debt costs for financing the Project, is $56.57 per MWh for the first full year of operation in the year 2014. Again, this excludes CO_2 emissions allowance costs.

25 Q. Has R. W. Beck compared these costs to other possible baseload technologies?

A. Yes.

26 Q. How will the AMPGS Project power costs compare to the costs of other potential alternatives in the power market, such as a new natural gas-fired combined cycle plant or a new generic coal plant?

A. In connection with the AMPGS Initial Feasibility Study, we prepared a comparison of the projected bus bar cost of the AMPGS Project to our projections of the bus bar costs of new generic coal plant and combined cycle plant. The estimated capital costs and operating costs of the generic power plants are based on our proprietary database of costs for similar type power plants across the country, adjusted for market and economic conditions in the AEP region where the AMPGS plant will be located.

The comparative projections of the annual bus bar costs for the AMPGS Project, a generic coal plant and a generic combined cycle plant over the period 2013 through 2042 (in 2013 dollars) were based on an average annual capacity factor of 85 percent. The

annual bus bar costs included fixed costs associated with the recovery of capital costs and operating costs, environmental costs and fuel costs. These estimated average annual bus bar costs also included an allowance for a CO_2 tax at an assumed cost of $10 per ton (in 2006 dollars).

On a present value average annual basis the bus bar costs of the AMPGS plant are estimated to be approximately 8 percent lower than the generic coal plant and 14 percent lower than the generic combined cycle plant.

27 Q. Why will the AMPGS Project power costs be lower than the costs of a new generic coal unit that could be constructed in the region by an investor owned utility or an Independent Power company?

A. AMP-Ohio can issue tax-exempt debt to finance the capital cost of the AMPGS Project and AMP-Ohio has obtained a private letter ruling from the IRS determining that AMP-Ohio's income is excluded from gross income taxes. Therefore, the estimated fixed costs associated with the recovery of capital costs (through tax-exempt financing) and operating costs (which would not include income taxes) for the AMPGS Project should be lower than the estimated costs of a new generic coal plant constructed by an investor owned utility or an Independent Power company that would have a higher cost of capital and be subject to income taxes.

28 Q. Based on R. W. Beck's review and evaluations of the AMPGS Project and the regional power market, can you comment on the regional power supply capacity and how AMPGS will satisfy the needs of its participating Members in 2013 when the Project is planned for commercial operation?

A. The supply and demand mix in the Eastern MISO[1] and PJM[2] areas (AMP-Ohio's areas of operation) is estimated to have a 16 percent reserve margin in 2008. However, by 2013,

[1] The Midwest Independent Transmission System Operator, Inc. (MISO) is a non-profit, member-based organization that provides open access to transmission markets, long-term transmission planning, and transparent

with continued load growth, no new generating capacity additions, and no retirements, this will drop to 6 percent. Between 1999 and 2006, 43,000 MW of new gas-fired generation was added to AMP-Ohio areas of operation. The timing of the AMPGS Project fits in well with the need for new base load resources in this region.

The addition of the AMPGS Project to the AMP-Ohio portfolio will enable AMP-Ohio to provide its participating Members with a reliable base load resource, and reduce their exposure to volatile market prices. In 2013, the capacity of the AMPGS Project represents less than 30 percent of total Member peak load and less than 45 percent of total Member energy needs.

29 Q. Did R. W. Beck review and compare the AMPGS Project power supply costs to the use of wind for power supply?

A. Yes.

30 Q. Please comment on the findings of this comparison.

A. Wind generation was not cost competitive with the AMPGS Project's power supply costs, nor was it competitive with generic coal-fired resources, generic gas-fired resources, or hydro generation. However, in the initial power supply studies prepared by R.W. Beck for AMP-Ohio Members, wind and hydro were added to Members' portfolios to evaluate the Members' future power supply resource needs under a Renewable Portfolio Standard (RPS). The studies showed that under the RPS case which included

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prices and manages the security-constrained economic dispatch of generation over its fifteen state territory. MISO's energy markets operations include Day-Ahead, Real-Time and Financial Transmission Rights markets.

[2] PJM Interconnection (PJM) is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity over thirteen states in the northeastern United States. PJM provides open access to transmission markets, long-term transmission planning and reliability, and operates a wholesale energy market. PJM's energy markets operations include Day-Ahead, Real-Time and Financial Transmission Rights markets. PJM also operates capacity markets.

additional wind and hydro capacity, over 1,000 MW of the AMPGS Project was still needed to meet the Members' future base load power supply requirements.

31 Q. Based on R. W. Beck's review and evaluations of the AMPGS Project, how does the Project compare to future power market price forecasts?

A. In connection with the AMPGS Initial Feasibility Study, we have prepared projections over the period 2008 through 2032 of power market prices in the AEP region where the AMPGS plant will be located and projections of the average annual power costs of the AMPGS Project. The projected power market prices and the AMPGS Project costs include an allowance for a CO_2 at an assumed cost of $10 per ton (in 2006 dollars).

The stacked bar chart in the figure below shows the total projected annual power costs over the period 2013 through 2032 of the AMPGS Project by major component. The major components include net debt service cost, fuel cost, other operating costs, environmental costs (including emission costs and/or allowance costs related to SO_2, NO_x, and Hg) and CO_2 costs which assume that a CO_2 tax would be put in place sometime during the period 2012-2018.

The line graph in the figure below shows the projected power market prices over the period 2012 through 2032 in the AEP region. As shown in this figure the projected annual power costs of the AMPGS Project are projected to be lower than the projected power market prices by approximately 8 percent to 20 percent over the period 2012 through 2032.

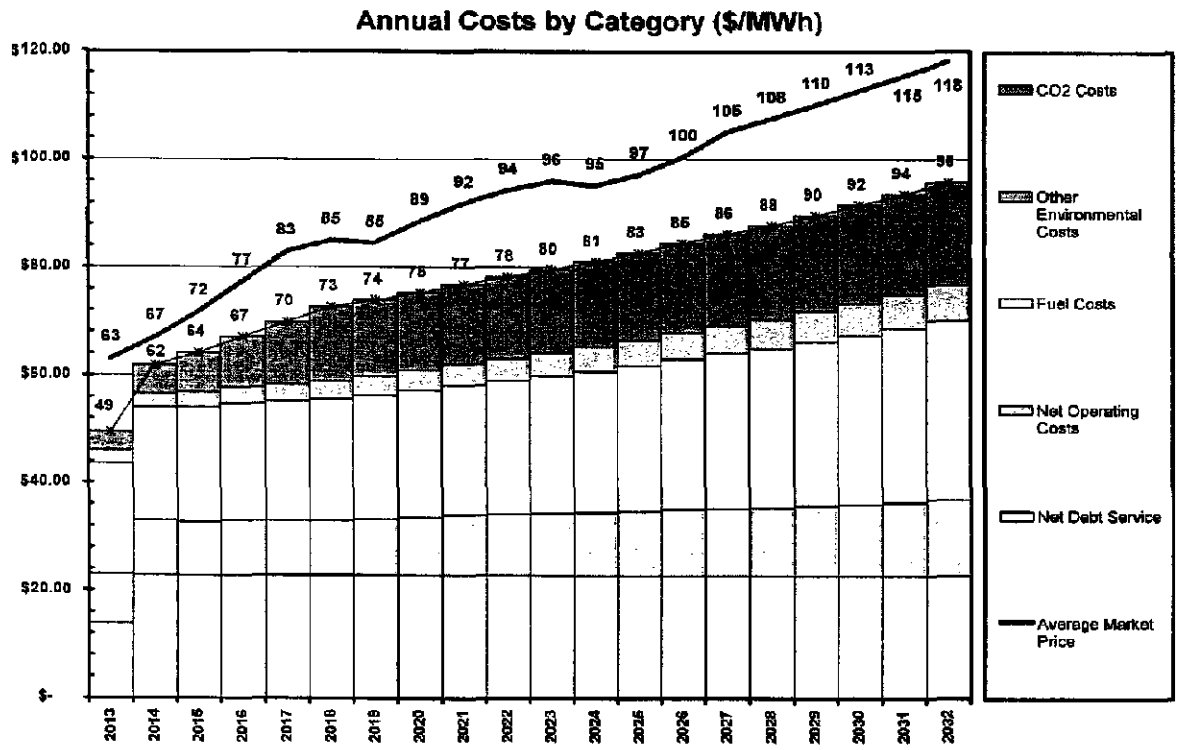

Figure _ - AMPGS Project Estimated Annual Costs by Category -$/MWh

32 Q. If future CO_2 legislation is enacted by the U.S. Congress requiring caps or a tax on CO_2 emissions from fossil fuel power plants, can you comment on the relative impact such caps or taxes would have on the projected operating costs for the AMPGS Project as compared to the regional power markets?

A. It is expected that if CO_2 legislation is enacted, it will be implemented under a cap and trade system, similar to that of the NO_X and SO_2 cap and trade programs, where some amount of allowances will be allocated to existing resources to help offset some of the cost impact. The CO_2 costs to the AMPGS Project relative to the existing regional market prices will depend on a number of factors, including; 1) the stringency of the cap, 2) allowance allocations to existing and new sources, 3) whether any price ceilings are set, 4) cost of technology to capture and sequester carbon, 5) price of natural gas, and 6) cost of new technologies to replace conventional resources.

33 Q. Are you familiar with the boiler design for AMPGS?

A. Yes.

34 Q. What is the design proposed by AMP-Ohio?

A. AMP-Ohio has proposed either a subcritical or supercritical boiler design.

35 Q. What is the difference between the two designs?

A. The basic difference between supercritical boiler design and subcritical boiler design is the operating pressure. Supercritical boilers and the associated steam turbine operate at pressures above 3,208 psig, which is the pressure point where water does not boil. Operation above this point avoids the steam "saturation temperature" and the two-phase mixture of water and steam, which are inherent to subcritical boilers, which typically operate at pressures in the 2,000 to 2,400 psig pressure range for new designs. These pressures are contrasted with recent supercritical designs that are in the pressure range of 3,600 to 4,000 psig.

The principal differences between a supercritical boiler design as compared to subcritical boiler are:

- The heavy steel boiler drum required by subcritical design is not needed
- Boiler tubing and piping are heavier for the higher pressures of supercritical operation
- Superheating area of the boiler require higher grade alloy steel materials for supercritical
- Steam turbine materials are heavier to withstand the higher pressures for supercritical

- Water treatment of boiler makeup water and the steam condensate is more rigorous for supercritical to achieve near ultra pure water to avoid mineral build-up in the boiler piping and turbine.

Because of the higher operating pressures for supercritical design its efficiency is improved over a subcritical design. Generally, a supercritical design unit heat rate (Btu/kWh) will be approximately 3 to 5 percent lower than a new subcritical unit heat rate. As result annual pollutant emissions from a supercritical unit will be approximately 3 to 5 percent lower than a subcritical unit on a pounds per kilowatt-hour basis.

36 Q. When will AMP-Ohio select a final design for its boilers?

A. Final boiler selection will be made after receipt of proposals from EPC Contractors in January 2008.

37 Q. Based on your knowledge of the Application, the analyses R. W. Beck conducted, and in your opinion, what will AMP-Ohio's choice of boiler design depend upon?

A. If it is fiscally and technologically feasible, we would recommend, and believe AMP-Ohio will select, a supercritical design. Key issues to be considered are capital costs, operating costs, and manufacturing capability. As noted in question and answer 35, a supercritical design will have a higher efficiency, thus overall emissions will be reduced if supercritical is selected. A subcritical design, if selected, would have slightly less efficiency, but would still be subject to the same emission limitations of AMP-Ohio's Air Permit. That permit is in draft form right now and allows AMP-Ohio to select either subcritical or supercritical boilers.

38 Q. Would the use of supercritical rather than subcritical change the basic design of AMPGS as specified in the Application in the case?

A. Other than steam pressures and temperature, an increase in capital cost offset by a decrease in fuel costs due to higher efficiencies and the related decrease in environmental impacts, no.

39 Q. Does this conclude your testimony?

A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing American Municipal Power-Ohio, Inc.'s Direct Testimony of Ivan Clark, for Case No. 06-1358-EL-BGN was served upon the following parties of record and proposed intervenors via electronic mail and/or via postage prepaid U.S. Mail on December 3, 2007:

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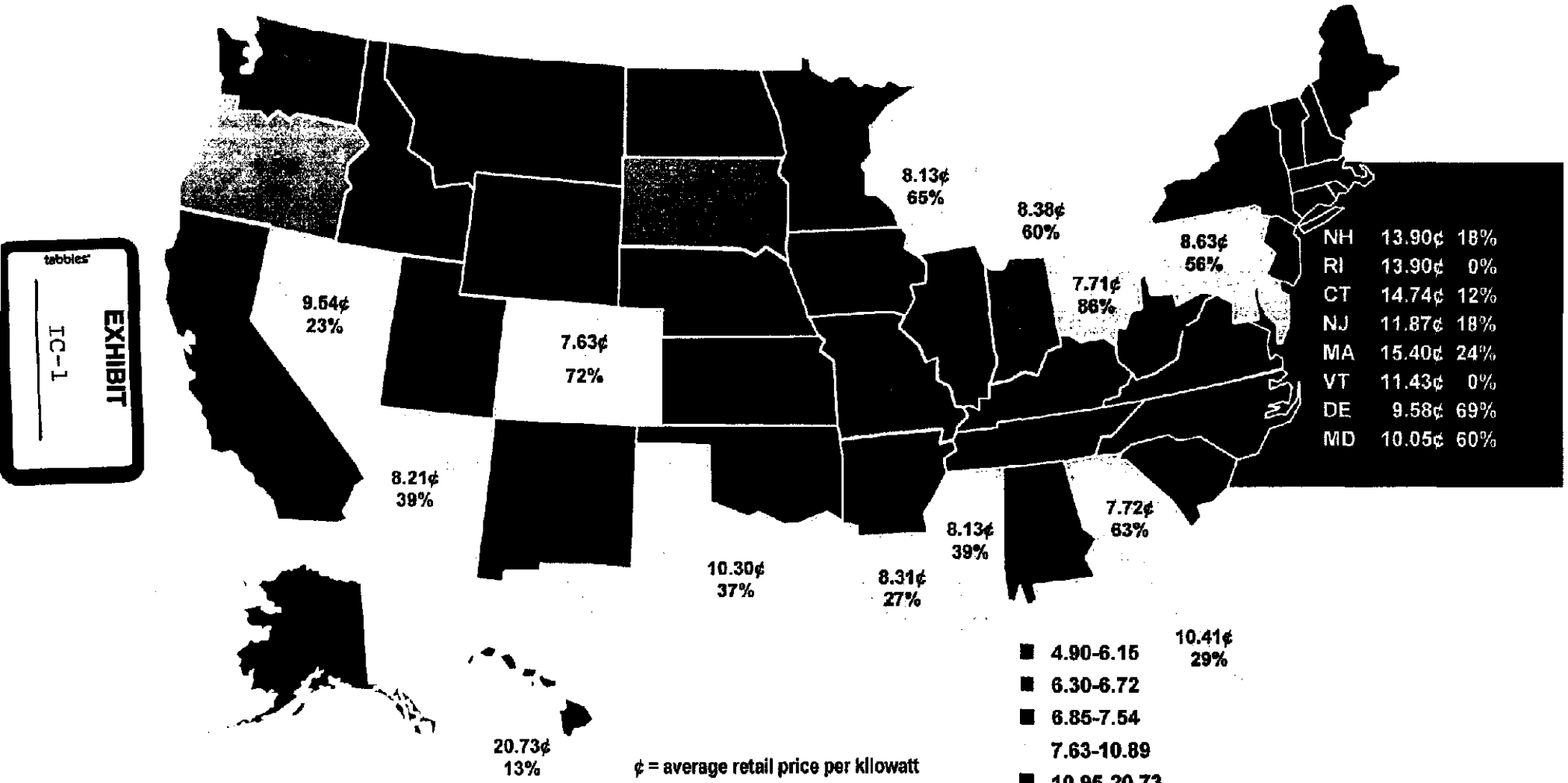
ND: 4830-5052-5442, v. 7

Low Cost Electricity From Coal

Over 50% of the Electricity Comes from Coal



¢ = average retail price per kilowatt hour for 2006

% = percent of total generation from coal for 2006

Source: Energy Information Administration

Prepared by R.W. Beck

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EXHIBIT

IC-1

Coal Today

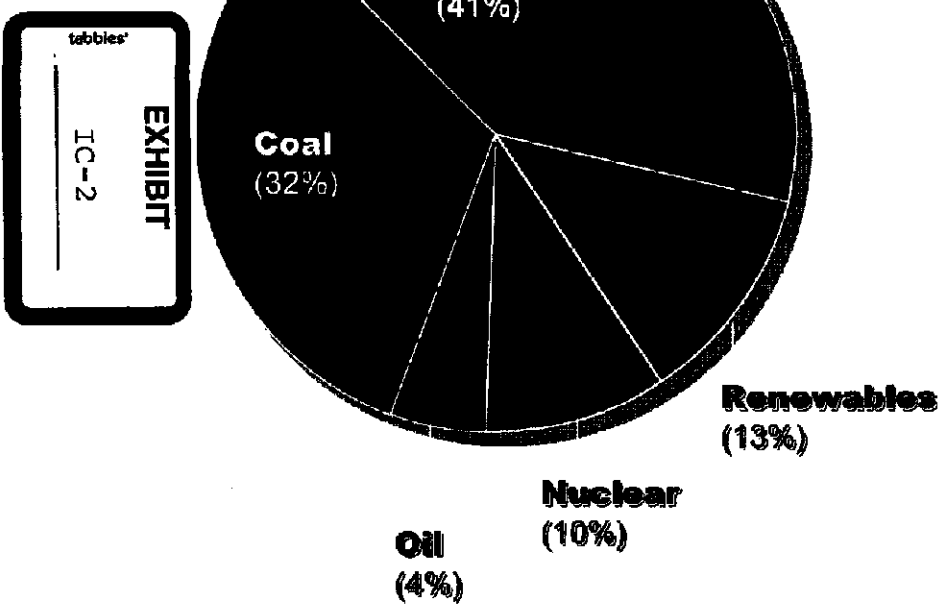

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EXHIBIT
IC-2

Total 2005 Generating Capacity

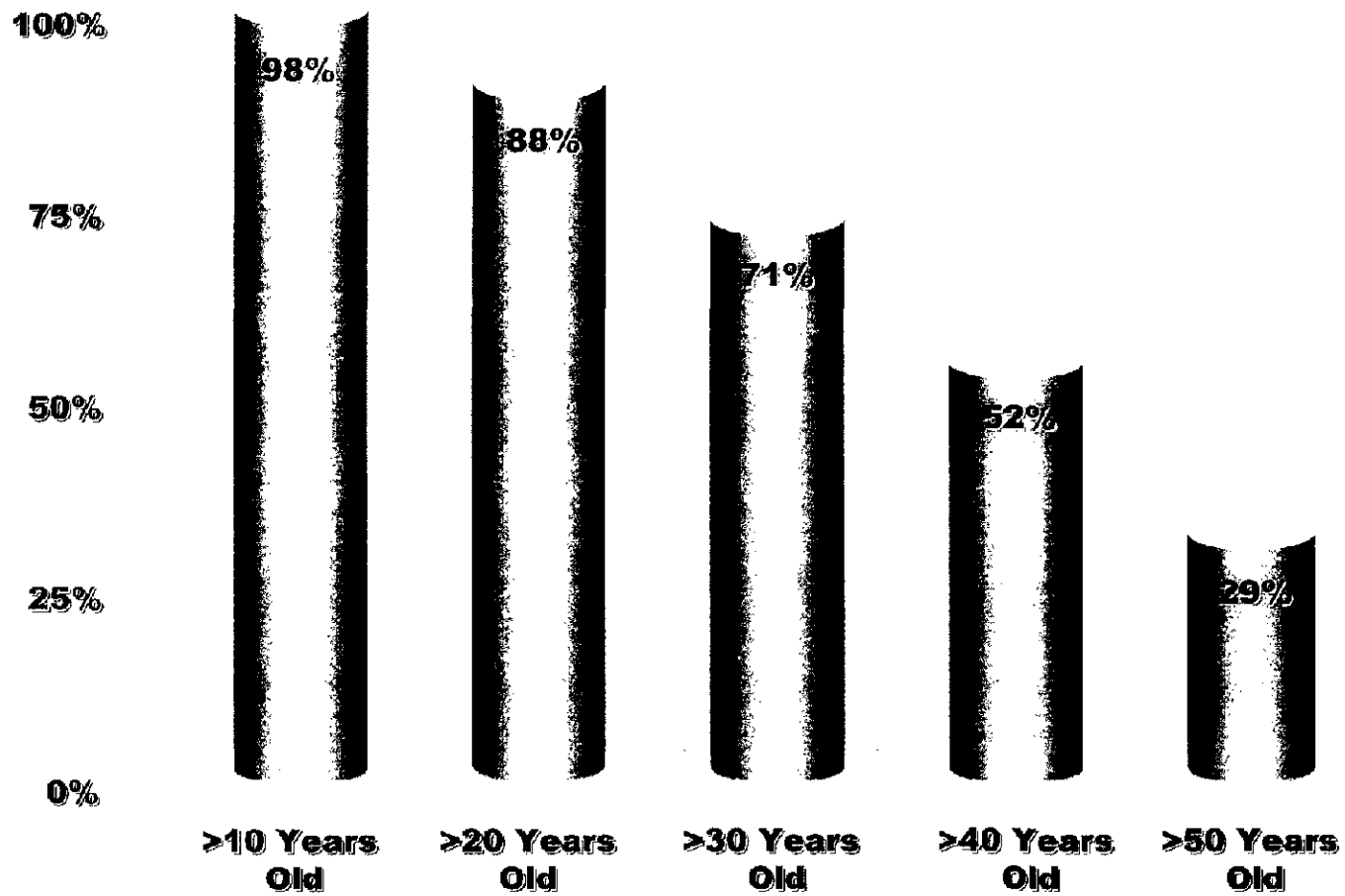
- **988,000 MW**
- **32% Coal***
- **10% Nuclear**
- **41% Gas**
- **13% Renewables**
- **4% Oil**

* More than 50% of electricity consumed

Source: Energy Information Administration

Prepared by R.W. Beck

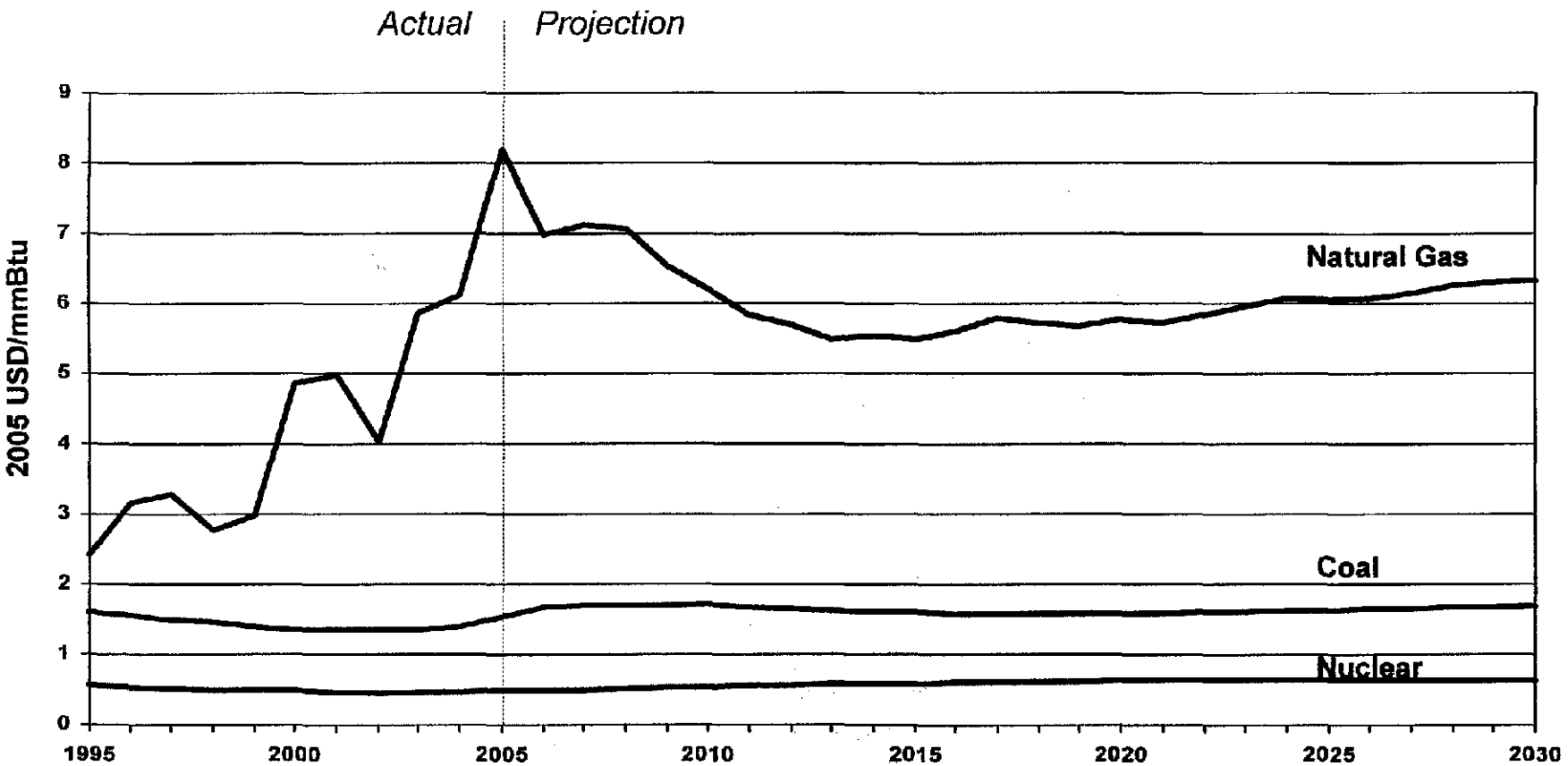
The Aging Coal Fleet



Source: Energy Information Administration

Prepared by R.W. Beck

Fuel Prices to Electricity Generators



Source: Energy Information Administration

Prepared by R.W. Beck

U.S. Electricity Generation Forecast*

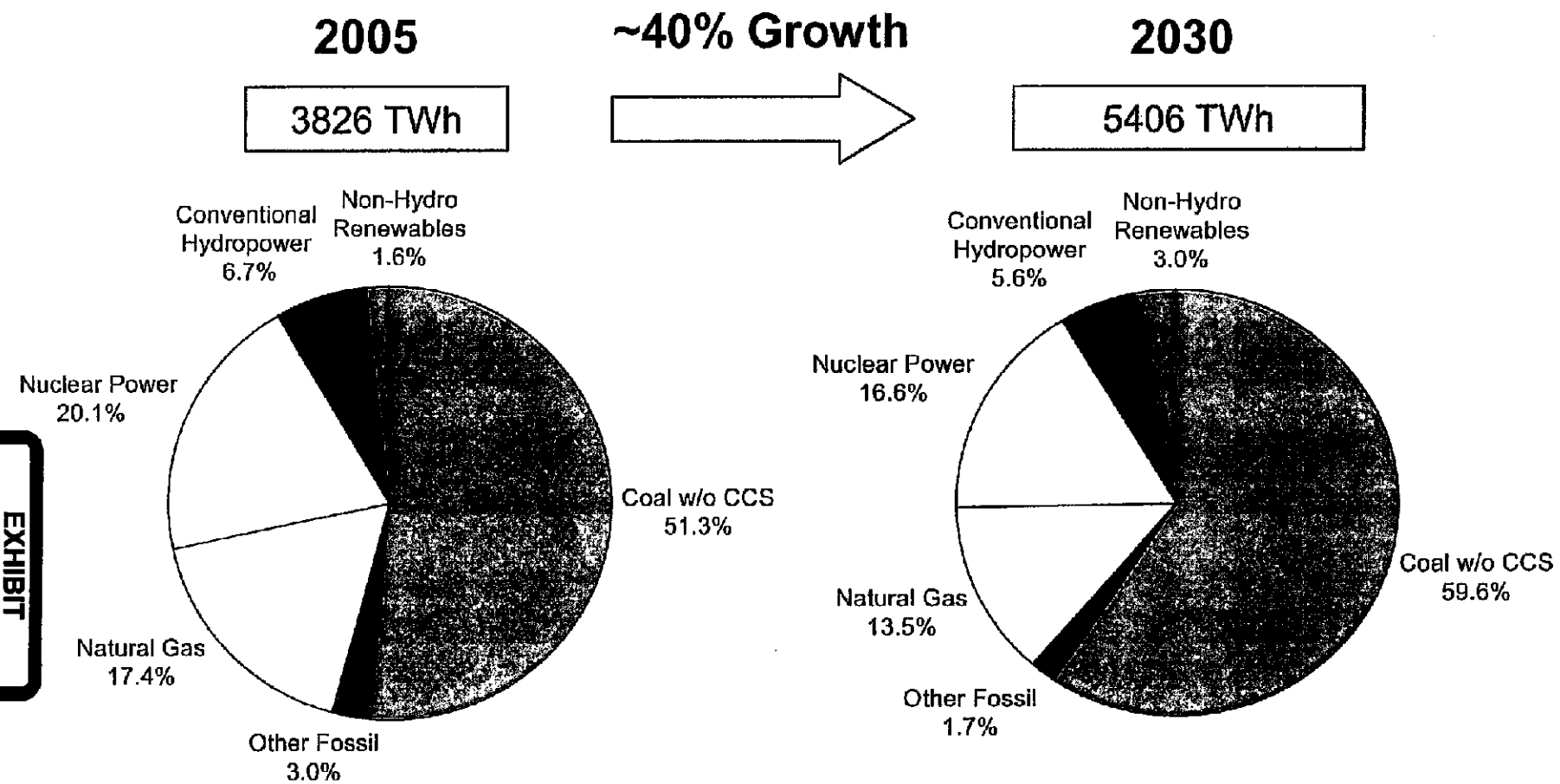


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EXHIBIT
TC-5

** Base case from EIA "Annual Energy Outlook 2007"*

44% Demand Growth by 2030

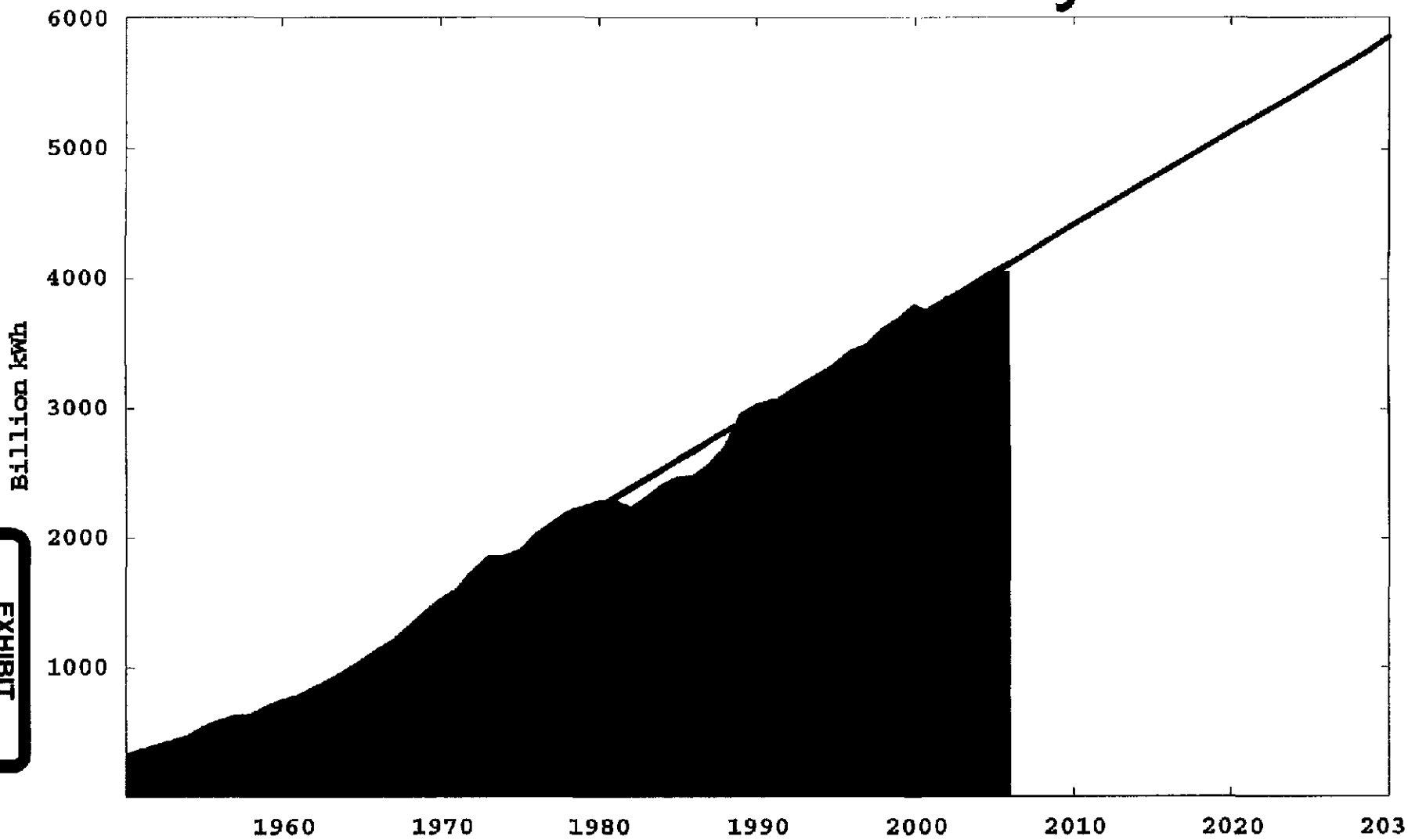

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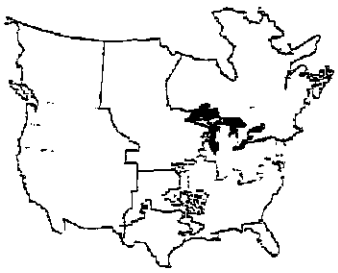
EXHIBIT
IC-6

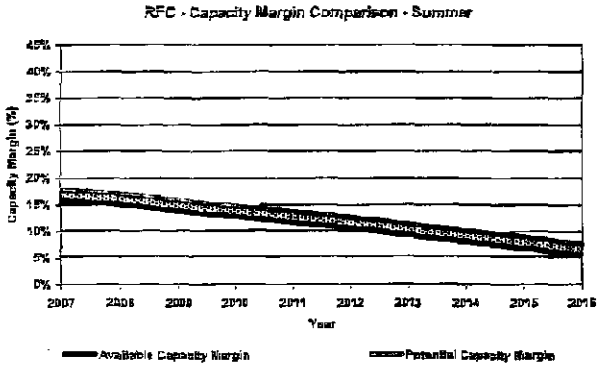
Carnegie Mellon

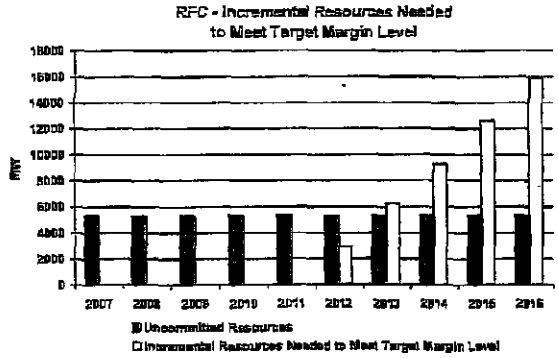
during the Gentilly outage. In the case of a high load forecast scenario, Québec still meets the NPCC resource adequacy criterion (LOLE less than 0.1 day per year).



RFC

The bulk power systems in the Reliability*First* (RFC) Region are expected to perform well in meeting the forecast demand obligations over a wide range of anticipated system conditions, as long as established operating limits and procedures are followed and proposed projects are completed in a timely manner. Major transmission line projects have been announced that are expected to enhance reliability of the transmission network in eastern areas of RFC. Reliability*First's* target for resource adequacy should be satisfied throughout the first half of the assessment period. Proposed capacity additions and existing capacity, including uncommitted resources, could potentially satisfy a target 15 percent reserve margin through 2012, if the transmission system is capable of fully delivering those resources.





These reserve margins include over 7,800 MW of existing uncommitted capacity and projected capacity additions. Starting in 2013, additional capacity resources are needed to maintain an overall RFC target 15 percent reserve margin. The amount of needed capacity resources ranges from 1,500 MW in 2013 to 11,100 MW in 2016. There is currently no certainty with the location and ownership of these required additional resources and; therefore, no unit information was included in the data provided to NERC.

Exhibit IC-8

AMP-Ohio AMPGS Capital Costs

Description	Dollars in Thousands
EPC Contract Costs	
Unit 1	$1,143,860
Unit 2	1,004,320
Total	$2,148,180
Owners Costs:	
Transmission Line [1]	$6,000
Interconnection Upgrades [2]	58,000
AEP Interconnection Switchyard	18,000
Spare 345 kV Transformer [1]	7,000
Gas Line [3]	5,000
Contingency [4]	100,000
Land and Right of Way Costs [5]	19,000
Infrastructure Costs [6]	10,000
Landfill Development	11,300
Development Costs to date	7,000
AMP Staff, Owner's Engineer, Consultants and Legal Fees [7]	30,300
Open Book - EPC [8]	12,000
Commissioning Training, Equipment & Expenses [8]	10,000
Spare Parts [9]	15,000
Commissioning Inventory (Coal, Ammonia (urea), Gas) [9]	20,000
Sales Taxes	-
Working Capital [10]	5,000
Taxes (Property and Other)	3,000
Insurance (By Owner, Builders Risk – in EPC)	25,000
Owners Cost Prior to Escalation	$361,600
Escalation on Owners Costs	23,000
Owners Costs with Escalation	$384,600
TOTAL	$2,532,780

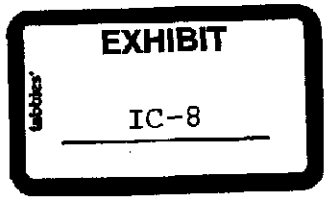


Exhibit IC-9

Estimated Production Related O&M Costs

Category	2013$[1]	2014$	2015$
Total Fixed O&M, $/kW-year	$38.60	$39.40	$40.21
Total Fixed O&M, $/MWh	5.18	5.29	5.40
Total Non-Fuel Variable O&M, $/MWh [2]	6.90	7.18	7.47
Fuel, $/MWh	19.94	20.39	20.73
Total Annual Operating Costs, $/MWh	32.02	32.86	33.60

[1] Estimated costs for 2013 assuming a full year of operation for both units at an 85 % capacity factor.
[2] Variable O&M costs include allowance costs for NOx, SO_2, and Hg, but exclude CO_2