

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Commission's own motion)
ordering **THE DETROIT EDISON COMPANY**)
to show cause why its retail rates for the sale)
and distribution of electric energy should not)
be decreased.)

Case No. U-14838

QUALIFICATIONS
AND
DIRECT TESTIMONY
OF
GUY N. HARRIS

THE DETROIT EDISON COMPANY
QUALIFICATIONS OF GUY N. HARRIS

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1 **Q. Please state your full name and business address.**

2 A. My name is Guy N. Harris. I am Director of Fossil Generation Performance
3 for Detroit Edison. My business address is 2000 Second Avenue, Detroit,
4 Michigan 48226.

5

6 **Q. Please state your educational background.**

7 A. I have a Bachelor of Science degree in General Engineering from the United
8 States Military Academy at West Point and two Masters of Science degrees
9 from Stanford University (one in Civil Engineering, one in Mechanical
10 Engineering). I am also a registered Professional Engineer (accreditation
11 earned in Commonwealth of Virginia).

12

13 **Q. Please describe your professional experience at Detroit Edison.**

14 A. I joined Power Generation in January of 2003 as the Director, Fossil
15 Generation Performance. My primary role at that time was to create an
16 integrated strategic plan that looked at market conditions, material condition
17 of all our fossil generation units, and overall Detroit Edison priorities. The
18 purpose was to develop a multi-year view of where the Company needed to
19 make investments in our portfolio of generating assets to best meet the
20 needs of Detroit Edison's customers, forecast the potential performance
21 outcomes of these investments, and make sure Fossil Generation was
22 supporting the overall objectives of the Company.

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1 From 2004 through 2005, I began implementing the required projects. This
2 entailed working with the plants and other staff groups (e.g., Engineering,
3 Generation Optimization) to develop capital and O&M requirements to
4 support our outage plans over a 2-3 year time horizon. It also entailed
5 identifying how and where the Company could show productivity
6 improvements in our operations and overall cost structure. To enable this, I
7 was given operational control over our continuous improvement group that
8 supports Fossil Generation.

9

10 **Q. Please describe your more recent duties as Director of Fossil**
11 **Generation Performance.**

12 A. Recently, my responsibilities have increased to include overall capital
13 planning and key Fossil Generation engineering functions focused on
14 improving overall generation performance. This includes the diagnostic
15 function resident in our internal lab operations, our process controls group
16 that had responsibility for planning, improving and maintaining our digital
17 control systems and our performance monitoring center that has the
18 responsibility to centrally monitor key performance indicators from all of our
19 operating units and develop trend analyses for these key indicators to help
20 identify on a predictive basis operational concerns for our power plant
21 equipment.

22

23 **Q. Please describe your professional experience prior to joining Detroit**
24 **Edison.**

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1 A. Prior to joining Detroit Edison I was a consultant with McKinsey and
2 Company from 1997 to 2001. During that time I served on 16 project teams
3 focused on developing long term strategic plans to, among other things,
4 create operational improvement plans focused on improving clients' overall
5 cost structure. Most of the clients I served were in the energy industry
6 (electric power and natural gas).

7

8 Before that I was an officer in the US Army Corps of Engineers (1983 to
9 1997). Over my 14 year career I served in various roles and positions of
10 increasing responsibility both overseas and in the United States. Most of
11 my positions involved project management, resource planning and
12 utilization, operational development and execution, training and educating
13 soldiers, and developing and executing equipment maintenance plans. I left
14 the Army with the rank of Major.

15

THE DETROIT EDISON COMPANY
DIRECT TESTIMONY OF GUY N. HARRIS

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1 **Q. What is the purpose of your testimony?**

2 A. The purpose of my testimony is to explain the Fossil Generation capital,
3 operation and maintenance (O&M), and fuel handling expenses for the year
4 2005 (actual) and the known and measurable changes to capital, O&M, and
5 fuel handling expenses that are expected to occur through 2007. In
6 addition, I developed and support as reasonable, prudent, and necessary,
7 the Fossil Generation capital, O&M and fuel handling expenses for all
8 forecast years. I also support and explain the reasonableness of the capital
9 expenditures for Fossil Generation for the years 2005 (actual) and 2006 –
10 2011 (forecast).

11

12 **Q. Which Exhibits are you supporting?**

13 A. I am supporting information on Schedules in the following Exhibit:

14 Exhibit DE-16

15 Schedule F3-2 Capital Expenditures – Fossil Generation

16 Schedule F5-2 O&M Expense – Fossil Generation

17 Schedule F6-1 Actual and Estimated Plant Availability Fossil Fueled for
18 Years 2005 – 2011

19 Schedule F6-2 ECAR Availability Terms - Fossil Fuel Generation

20

21 **Q. Were these exhibits prepared by you or under your direction?**

22 A. Yes, they were.

23

24 **Q. How is your testimony organized?**

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1 A. My testimony consists of the following three (3) parts:

2 Part I Plant Availability

3 Part II Capital Expenditures

4 Part III Operating and Maintenance Expenses

5

6 **Part I**

7 **Plant Availability**

8

9 **Q. Can you provide an overview of Detroit Edison's Generation assets?**

10 A. As of May 1, 2006, Detroit Edison's total owned net summer operating
11 capability was 11,113 MW and is comprised of:

12	Nuclear Steam	1,111 MW
13	Fossil Steam	7,983 MW
14	Pumped Storage	917 MW
15	Peaking Plant	1,102 MW
16	Total Owned Capability	11,113 MW
17	Total Fossil System	9,085 MW

18

19 The fossil steam plant contains both coal-fired base/intermediate load units
20 and oil/natural gas cycling/peaking units. They are comprised of:

21 • Coal Plants (Base /Intermediate Load):

22		<u>Capacity</u>	<u>No. Units</u>
23	Belle River (less MPPA)	1,026 MW	2
24	Harbor Beach	103 MW	1

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1	Marysville	84 MW	1
2	Monroe	3,115 MW	4
3	River Rouge	510 MW	2
4	St. Clair	1,415 MW	6
5	Trenton Channel	<u>730</u> MW	<u>3</u>
6	Total Coal Capacity (steam)	6,983 MW	19

7

- Oil/Natural Gas Plants (Cycling/Peaking Load):

9		<u>Capacity</u>	<u>No. Units</u>
10	Conners Creek	215 MW	2
11	Greenwood	<u>785</u> MW	<u>1</u>
12	Total Oil/Natural Gas (steam)	1,000 MW	3

13

14 Detroit Edison's share of the Ludington Pumped Storage Plant, jointly
 15 owned with Consumers Energy, provides 917 MW of peaking capacity.
 16 Detroit Edison has additional peaking capacity of 1,102 MW provided by 25
 17 combustion gas turbines at 7 locations, 55 diesel peaking units at 13
 18 locations and 5 jet peaking units at 3 locations.

19

20		Summer	
21		<u>Capacity</u>	<u>No. Units</u>
22	Ludington Pumped Storage	917 MW	6
23	Gas Turbine Peaking (7 locations)	819 MW	25
24	Diesel Peaking (13 locations)	147 MW	55
25	Jet Peaking (3 location)	<u>136</u> MW	<u>5</u>
26	Total Peaking Capacity	2,019 MW	91

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2 As can be seen from the data provided, Detroit Edison's generating system
3 is comprised of a wide range of peaking, intermediate and base load units,
4 varying in size and fuel types. This diversity of plant type and fuel gives
5 Detroit Edison crucial flexibility to meet the energy needs of its electric
6 customers in a cost effective and reliable manner.

7

8 **Q. What is the relative age of Detroit Edison's installed fossil capacity by**
9 **fuel type?**

10 A. The average age of our 19 coal fired generation units is 43 years. The
11 average age of our 3 gas/oil fired generation units is 46 years. In 2006 over
12 85% of Detroit Edison's fossil steam generating units, representing over
13 75% of the Company's installed capacity, will be over 30 years old. There
14 are 6 pumped storage units at Ludington. The age of these units is
15 approximately 30 years. There are 85 peaking units at 21 locations. Most
16 of these units were installed in the mid to late 1960's, with the exception of
17 those rebuilt combustion turbines that were installed at Delray and the new
18 combustion turbines that were installed at the Greenwood and Belle River
19 Plants in 1999. These recently installed combustion turbines are new
20 technology, high-efficiency machines that increase the diversity of our
21 peaking resources while reducing the average age of the Company's
22 generating resources.

23

24 **Q. What is the significance of the age of Detroit Edison's fossil**

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1 **generation fleet?**

2 A. Like automobiles, as generating plants age, they require significant
3 maintenance resources to keep them operating in an optimal and reliable
4 condition. As the age of the Company's generating fleet continues to
5 increase, the system availability will be adversely affected. This impact is
6 evidenced by an increase in equipment failures, which in turn, results in an
7 increase in the Company's generation unplanned outage factor, in an
8 increase in periodic outage durations for major component replacements,
9 and in an increase in unscheduled and more costly reactive maintenance.
10 The Detroit Edison fossil steam fleet's average age of over 30 years is at, or
11 nearing, the design life of major components. The Company has diligently
12 maintained and operated its generation fleet to reliably meet the energy
13 needs of its electric customers. Continuing and improving upon these
14 efforts will require new capital outlays and ongoing O&M expenditures.

15

16 **Q. Are the above-mentioned generating units in active service?**

17 A. Most are in active service. However, at this time, the Marysville plant is in
18 cold standby.

19

20 **Q. Can you define cold standby?**

21 A. As defined by the U.S. Department of Energy – Energy Information
22 Administration, a unit that is in cold standby "usually requires 3 – 6 months
23 to reactivate".

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2 **Q. What is the primary fossil fuel utilized by Detroit Edison power plants?**

3 A. Over 60% of Detroit Edison's generation capacity is coal-fired and over the
4 past 3 years (2003-2005) an average of 81% of the total Detroit Edison
5 generation has been from its coal units. Detroit Edison continues to be a
6 pioneer in the use of less expensive western coal. This practice has
7 reduced the overall cost of electricity for our customers even though the
8 maintenance costs associated with its use have increased and significant
9 capital costs have been incurred to modify plant equipment to burn the
10 western coal. Plants have used higher western coal blends at reduced
11 loads during periods such as nights, holidays and weekends, when
12 maximum output is not required, thereby further reducing the average cost
13 of generation for the customer. Notwithstanding the higher maintenance
14 and capital costs, the use of western coal is very economical, has
15 environmental benefits, and has become more prevalent across the
16 industry.

17

18 **Q. Has Detroit Edison restarted any units since the last main rate case?**

19 A. No.

20

21 **Q. Has Detroit Edison installed any new fossil fuel electric generation**
22 **equipment since 2003?**

23 A. In 2004 and 2005 the Company installed new dense pack turbine upgrades
24 at Monroe Units 3 and 2 respectively, thereby increasing the net

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1 demonstrated capacity of these units by 35 MW each and also improving
2 the overall efficiency of these units. These turbine upgrades completed a
3 multi-year program of power and efficiency improvements at our Monroe
4 plant.

5

6 For 2006 the Company is estimating a 10-15% increase in our Conners
7 Creek Plant generation capacity for this summer as a result of upgrades
8 made this year (2006) to the plant (boiler feed pump repairs; condenser
9 replacement). The exact amount of increased capacity will be determined
10 through demonstrative testing in May/June 2006.

11

12 **Q. What is a “dense pack” design?**

13 A. “Dense Pack” is a term for an advanced design steam path option. The
14 basis of the “Dense Pack” design is the fundamental principal that more
15 turbine stages at smaller wheel diameters creates a more efficient steam
16 path. It involves changes to the turbine steam path, which result in a single
17 flow path, and replacement of existing blade rows with more rows of an
18 advanced design blade. The key benefits of this design are increased
19 efficiency, sustainability of that increased efficiency due to a reduction in
20 solid particle erosion of the blades, increased maintenance intervals (10 or
21 more years) and lower life-cycle costs. In addition, there is increased
22 capability with the same steam flow. Thus, Detroit Edison customers are
23 provided additional capacity for the same fuel expenditures.

24

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1 **Q. Can you explain Exhibit DE-16, Schedule F6-1, entitled “Actual and**
2 **Estimated Plant Availability for years 2003 – 2011”?**

3 A. Exhibit DE-16, Schedule F6-1, includes historical availability for 2003
4 through 2005 and presents the Company’s projection of the plant availability
5 that can be reasonably achieved by each Detroit Edison plant during the
6 years 2006 through 2011, given the levels of O & M and capital
7 expenditures that I support as reasonable and prudent.

8

9 **Q. How were the plant availabilities calculated?**

10 A. Detroit Edison plant availability was calculated using the NERC/GADS
11 definition for Availability Factor (formerly referred to as ECAR Availability).
12 Exhibit DE-16, Schedule F6-2, defines the calculation of availability by the
13 NERC/GADS method. In a nutshell, plant availability is the percentage of
14 the period hours (usually a year) that the unit is available to run, or available
15 hours over period hours. During periods of periodic or scheduled
16 maintenance, the unit is not available, and thus the “Available Hours” (see
17 line 2, Exhibit DE-16, Schedule F6-2) decrease, lowering the availability.
18 Since maintenance requirements change with running time, equipment
19 performance levels, age of the equipment, historical trends and allocation of
20 maintenance resources, it can be seen that availability changes from year to
21 year. In addition, any forced and unforeseen outages reduce available
22 hours.

23

24 **Q. What are the major drivers of unit availability?**

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1 A. There are two major events that impact unit availability: (1) Planned
2 outages and (2) Unplanned outages. Planned outages are those the
3 Company has developed long range plans to execute and are designed to
4 proactively address reliability issues and improve our units' performance.
5 Examples of this are our major periodic outages. Unplanned outages occur
6 for two reasons: systemic reliability issues that are common challenges
7 across our system and "one time events" which are unique to a specific
8 plant or unit. Systemic reliability challenges can typically be addressed
9 proactively through a disciplined maintenance program combined with
10 predictive testing and measuring to help foresee these problems. An
11 example of this is a boiler tube failure or tube leak. "One time event"
12 examples are main transformer failure and generator exciter failure.

13

14 **Q. Can you explain the Company's 2005 plant availability?**

15 A. In 2005 our fossil plant availability was 85.3%. A breakout of the non-
16 available time is as follows:

- 17 • Planned outages: 6.7%. This reflects the maintenance plan the
18 Company had for this year. The major planned outages were:
 - 19 o Greenwood: turbine repairs, boiler tube replacement and repairs,
20 generator rewind.
 - 21 o Monroe Unit 2: turbine overhaul, precipitator upgrade, boiler tube
22 replacement and repairs.
 - 23 o River Rouge Unit 3: turbine overhaul, main unit transformer
24 replacement, boiler tube replacement and repairs.

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- 1 • Unplanned outages: 8.0%. Most of these outages were boiler related
- 2 outages, while a significant minority were due to one-time events. 2005
- 3 one time events included: Belle River Unit 1 exciter failure, Monroe Unit
- 4 4 auxiliary transformer failure and River Rouge Unit 3 generator fire.

5

6 **Q. On what basis did you make your Detroit Edison forecast of plant**

7 **availability for 2006 and beyond?**

8 A. The Detroit Edison forecasted plant availabilities were based on input from

9 the reliability engineers and plant staffs at each plant, historical unit

10 performance, known maintenance and operational status of each unit and

11 future planned outage schedules. In addition, the age of the plant

12 equipment and potential impact of new environmental regulation on

13 operations was considered.

14

15 **Q. What are the projections for availability for 2006 through 2011?**

16 A. 2006 availability is estimated to be 83%. This is driven by a projected

17 unplanned outage factor of 8.6 percent (ongoing challenges in our boilers is

18 forecasted to be the vast majority of this) and a planned outage factor of

19 8.4% caused by a relatively heavy periodic outage plan (Monroe Unit 1,

20 Monroe Unit 4, Monroe Unit 3, St. Clair Unit 1, St. Clair Unit 2, St. Clair Unit

21 3, and River Rouge 2).

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1 The Company is forecasting an availability for 2007 to be 86%, based on a
2 forecasted planned outage factor of 5.4% and an unplanned outage factor
3 of 8.6%.

4
5 2008-2011. The availability for this period is expected to average 87%, with
6 a forecasted planned outage factor of 4.4% and an unplanned outage factor
7 of 8.6%. During this period we expect to have a relatively stable periodic
8 maintenance plan as we converge on an improved cycle for all units.
9 Despite the age of our generating assets, we expect to be able to cap our
10 levels of unplanned availability with this type of maintenance program.

11

12 **Q. What is Detroit Edison doing to improve overall availability?**

13 A. The Company has undertaken two major efforts to address our plant
14 availability challenge:

15 ***Planned Outage improvement.*** In 2005 we started a periodic outage
16 execution improvement effort designed to decrease the duration of our
17 planned outages while having no impact on scope of work performed and
18 improving the overall cost to execute that outage.

19

20 ***Unplanned Outage improvement.*** Because a significant percentage of
21 our unplanned outages across the portfolio are caused by boiler tube
22 failures (a common experience in our industry based on the age of fossil
23 steam generating equipment), a Boiler Tube Failure Reduction team was
24 formed in 2003, combining both technical/engineering skills with

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1 maintenance execution skills. The focus of this team is to identify the most
2 critical needs for investment in our boilers through data collection,
3 equipment history, and Original Equipment Manufacturer (OEM) interface.
4 Based on the age of the portfolio and recognizing that most of our
5 equipment is reaching end of design life, improvements in this area will be
6 driven by our future planned outages for each unit. The results of this
7 team's efforts are reflected in our capital plan for 2006-2007 and into the
8 future.

9

10 **Q. How confident are you with this forecast?**

11 A. Detroit Edison has invested significant capital and maintenance dollars over
12 the last several years for reliability, plant economics and environmental
13 reasons and expects those needs to continue, and to increase in the future.
14 The impact of aging equipment and the new environmental regulations have
15 impacted overall plant performance. Most environmental equipment reduces
16 plant capacity and the installation of the equipment has near-term
17 availability impacts. In spite of these operational concerns, I believe that
18 Detroit Edison has invested wisely in its plants and as we gain experience, I
19 expect to see the availability of our generation equipment improve over the
20 next 3-5 years. However, the work and the challenges will not end and the
21 Company will require appropriate funding levels to continue making
22 progress.

23

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Part II

2

Capital Expenditures

3

4 **Q. Can you explain the generation plant capital planning process?**

5 A. The Plant Improvement Projects (PIP) capital budget is approved annually
6 for expenditures during a given calendar year. The annual budget is
7 derived from the work defined by plant-level equipment reliability plans,
8 OEM recommendations and recommendations of Fossil Generation's
9 equipment/system experts. Requests for capital require the initiation of an
10 approved project request including the reason for the project and an
11 estimate of costs and benefits. These requests are then turned over to the
12 Projects Group for further definition of a schedule and benefits, and to
13 prepare a conceptual cost estimate. In any given year, there are projects in
14 various stages of development. Projects that are adequately developed are
15 prioritized to be executed for a given year and then submitted for approval
16 to the Project Approval Team (PAT), which is comprised of the staff level
17 directors and plant directors.

18

19 Projects in a given year must meet specific criteria. Typically, continuing or
20 "carry over" projects are included to complete the execution of previously
21 approved projects. During the year, new projects are approved if they are
22 justified by economics or are required to meet regulatory requirements for
23 safety or environmental reasons. Not all projects that are proposed are
24 funded. Capital funding is also tied to the periodic outage schedule since

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1 many capital projects are implemented during these longer planned outages
2 to maximize plant availability.

3

4 There is also an “emerging capital” fund available for new projects, which
5 the PAT approves, in order to cover any unforeseen capital needs during a
6 given year. This fund typically amounts to less than 10% of the total capital
7 budget. A good example of the use of this fund was the need to replace the
8 main unit transformer on Monroe Unit 1 in 2004 after it had reached its end
9 of life.

10

11 As can be seen, the capital spending and approval process is rigorous and
12 is designed to prioritize projects in order to achieve the best combination of
13 reliability and generation economics.

14

15 **Q. Can you explain Exhibit DE-16, Schedule F3-2, “Capital Expenditures –**
16 **Fossil Generation” which shows the actual and estimated capital**
17 **expenditures for 2005-2011?**

18 A. Exhibit DE-16, Schedule F3-2, summarizes Detroit Edison fossil plant
19 estimated PIP capital expenditures for the years 2005 (actual) through
20 2011. These actual (2005) and estimated capital expenditures were/will be
21 used to implement those projects at the various power plant sites, peaker
22 sites, and Ludington, which are part of the Company’s Long Term
23 Equipment Reliability plan and are intended to improve plant operation,

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- 1 replace aging systems or equipment, increase efficiency or availability
- 2 and/or address operating and maintenance issues.
- 3 • Line 2, "Safety", includes those projects necessary to maintain a safe
- 4 environment and meet applicable safety regulations.
- 5 • Line 4, "Environmental – Non NOx", includes those capital expenditures
- 6 necessary to satisfy increasing air, water, noise, and waste disposal
- 7 regulations mandated by federal, state, and local governments, other
- 8 than those required by the Clean Air Act regarding NOx, SO2, and
- 9 Mercury emissions control.
- 10 • Line 6, "Boiler and Turbine", includes those projects intended to improve
- 11 boiler or turbine operation, replace unreliable systems or equipment,
- 12 increase efficiency or availability and/or address operating and
- 13 maintenance problems related to the boiler and turbine systems.
- 14 Examples of these projects include replacement of turbine blades,
- 15 replacement of air heater baskets and seals, and replacement of steam
- 16 piping and boiler internal piping and headers.
- 17 • Line 8, "Cables and Controls", includes expenditures for distributed
- 18 control system installation and the replacement of large power cables.
- 19 • Line 10, "ER Support", includes projects for the Fuel Supply,
- 20 Environmental Management and Resources, and Generation
- 21 Optimization groups as well as for Fossil Generation emerging work.
- 22 • Line 12, "Balance of Plant", includes expenditures for mobile equipment,
- 23 general plant, common systems and fuel systems.
- 24

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1 **Q. What are your thoughts concerning the trend of Detroit Edison's PIP**
2 **capital expenditures from 2005 through 2011?**

3 A. I believe that a 3-year rolling average is the proper context for viewing such
4 expenditures because power plant projects are tied to periodic outage
5 schedules and often span more than one year. The 3-year rolling average
6 of capital expenditures for the years ending 2003 through 2005 were \$88.3
7 million, \$92.9 million, and \$107.5 million.

8

9 The projected 3-year rolling average ending 2006 is \$118.1 million. While
10 capital spending has been fairly level over the period 2004 through 2006,
11 the levels are significantly higher than what the Company experienced in
12 2003 (\$85.8 million). The primary driver for this increase from 2003 is due
13 to the \$26.8 million increased investment level in the boiler and turbine
14 category. This increased investment was a direct result of our Boiler Tube
15 Failure Reduction team's identification of the critical needs to improve boiler
16 reliability and matching this to our equipment maintenance plans.

17

18 **Q. Can you specifically describe the 2006 capital expenditures?**

19 A. The Company is expecting to invest \$125.3 million in capital in 2006 in
20 Fossil Generation. The investments by major category are:

21 Safety: \$5.1 million. Major projects in this category include \$2.7 million and
22 \$2.3 million to replace main steam lines on St. Clair Unit 2 and Unit 1
23 respectively. This piping was reaching end of life and was proactively
24 replaced based on our testing and predictive maintenance program.

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1 Environmental Non-NOx: \$27.4 million. The major projects in this category
2 include \$16.4 million to upgrade Monroe Unit 1's precipitator (resulting in
3 lower particulate emissions and a greater ability to generate within
4 environmental restrictions), \$2.3 million to replace the consumed catalyst on
5 Monroe Unit 1's Selective Catalytic Reduction (SCR) equipment, and \$2.2
6 million to upgrade Sibley Quarry's wastewater system (part of the Trenton
7 Channel Power Plant's operation).

8 Boiler and Turbine: \$ 63.5 million. Major projects in this category include:

- 9 • Belle River: \$1.5 million for a Unit 1 generator exciter rewind.
- 10 • Monroe: The following work was performed on Unit 1 as part of its
11 periodic outage: \$12.1 million to replace the secondary superheater
12 pendants, \$8 million to replace waterwall tube sections, and \$1.4
13 million to replace the generator retaining rings. The superheater and
14 waterwall tube section replacements are driven by our Boiler Tube
15 Failure Reduction effort and are being done based on forecasted "end
16 of life", proactively addressing high potential failure areas.
- 17 • St. Clair: \$2.2 million to install water cannons to improve boiler
18 performance (improved heat rate which lowers fuel cost and mitigates
19 the need to clean the boiler frequently).
- 20 • River Rouge: The following work was performed on Unit 2 as part of
21 its periodic outage: \$4.9 million to replace HP turbine rotor, \$2.0 million
22 to replace LP (Low Pressure) turbine blades(these blades had reached
23 end of life), and \$2.9 million to replace the precipitator rapping system.

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- 1 • Connors Creek: \$1.6 million to retube the condenser helping to
2 improve the capacity of this plant as discussed earlier.

3

4 Cables and Controls: \$ 11.2 million. Major projects in this category include
5 \$2.7 million to engineer the DCS (Distributed Control System) for Belle
6 River Unit 1, \$1.2 million to install an as fired coal sampler at St. Clair to
7 help improve the overall fuel efficiency of the plant, \$1.1 million to engineer
8 the DCS system for Harbor Beach and \$1 million to replace the fiber optic
9 control system cable for Monroe Fuel Handling operation. Another \$1.4
10 million is for our Smart Signal equipment monitoring system, part of our new
11 Performance Center. This center is designed to be a “mission control” like
12 operation that can proactively help our plant control rooms monitor and
13 identify emerging problems and issues.

14 Energy Resources (ER) Support: \$0.5 million.

15 Balance of Plant: \$ 17.5 million. Major projects in this category include \$1.6
16 million to replace a Unit 1 coal mill feeders at St. Clair.

17

18 **Q. Can you detail the 2007 capital expenditures?**

19 A. The Company expects to investment \$128.3 million in 2007. The
20 breakdown of major investment is as follows:

21 Safety: \$5.5 million. Major projects include:

- 22 • Harbor Beach: \$1.5 million to replace generator retaining rings and
23 \$2.1 million total to replace 2400V switchgear on Bus 11 and Bus 12.

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- 1 • St. Clair: \$1.2 million to replace 13.8KV switchgear on Unit 6 (Bus HH
2 and JJ).

3 Environmental Non NOx: \$4.1 million. Major projects include:

- 4 • St. Clair: \$1.5 million for Unit 7 (Transformer/Rectifier) T/R set
5 replacement to improve overall precipitator performance.
6 • Trenton Channel: \$0.5 million for fly ash system fugitive dust control
7 and \$0.5 million for fly ash wet loader system.

8 Boiler and Turbine: \$62.7 million. Major projects include:

- 9 • St. Clair: \$2.9 million for Unit 7 generator field rewind, \$2.3 million for
10 Unit 7 waterwall tube replacements.
11 • Trenton Channel: \$5.5 million for Unit 9 economizer replacement
12 which will allow us to improve heat rate and recover current generation
13 derate of up to 65 MW.
14 • Harbor Beach: \$1.8 million for RH (Right Hand) generator rotor
15 rewind, \$1 million for turbine blade replacement, \$1.5 million for
16 generator retaining ring replacement, and \$1.2 million for secondary
17 superheater pendant replacement.
18 • Monroe: Investment for 2008 periodic outage preparation long-lead
19 item procurement: for Unit 4 reheater (\$5 million), airheater baskets
20 (\$1.7 million), and superheater (\$3 million). The reheater and
21 superheater replacement are driven by our Boiler Tube Failure
22 Reduction effort and are being done based on forecasted "end of life",
23 proactively addressing high potential failure areas.

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- 1 • Belle River: 2008 outage preparation long lead item procurement for
2 Unit 2 superheater inlet pendant replacement (\$2 million). The
3 superheater replacement is driven by our Boiler Tube Failure
4 Reduction effort and is being done based on forecasted “end of life”,
5 proactively addressing high potential failure areas.

6 Cables and Control: \$26 million. Major projects include:

- 7 • Belle River: Install DCS system on Belle River Unit 1 (\$17.5 million)
8 allowing us to better control combustion and more efficiently operate
9 the unit, resulting in lower overall fuel costs.
10 • Harbor Beach: install DCS system for \$2.2 million at Harbor Beach
11 • Greenwood: engineer DCS system for \$3 million.
12 • Install Fuel Samplers and Analyzers: \$3.6 million (Trenton Channel
13 and River Rouge). This will allow the Company to better monitor the
14 quality and condition of the fuel going into the boiler, improving overall
15 fuel efficiency.

16 Balance of Plant: \$27.0 million. Major projects include:

- 17 • \$10 million to install reverse osmosis make up water systems at River
18 Rouge and Trenton Channel (\$5 million each). This will replace
19 underperforming equipment with new technology that is more cost
20 effective to operate and maintain.
21 • \$2 million to install zebra mussel mitigation equipment at Trenton
22 Channel, helping to maintain the cleanliness and performance of
23 critical cooling water intake systems.

Line
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- 1 • \$1.3 million to replace four (4) coal mill gearboxes at Monroe,
2 improving the performance of the mills.

3 ER Support: \$3.0 million

4

5 **Q. Can you explain the forecast of the 2008-2011 capital expenditures?**

6 A. While the Company has not completed detailed engineering and cost
7 estimates necessary to finalize the PIP capital projects for the years 2008-
8 2011, there are a number of projects being developed. The Company
9 expects to invest a total of \$546 million in capital for the period 2008 through
10 2011(approximately \$136 million per year). This investment plan is driven
11 by the periodic outage maintenance plan, supporting the Long Term
12 Equipment Reliability (LTER) plan. The variation across categories is driven
13 primarily by the required periodicity of maintenance for individual units in our
14 portfolio. The majority of the investment for this period is in the Boiler and
15 Turbine area (34% to 49%). This level of investment and focus is prudent
16 based on the age of Detroit Edison's generation portfolio and condition of
17 these components and is consistent with our overall equipment reliability
18 plan. The current forecast of this spending and examples of major projects
19 for 2008 are:

- 20 • Replace reheater on Monroe Unit 4 (\$15 million) to proactively address
21 a high potential failure area forecasted by the Boiler Tube Failure
22 Reduction team.
- 23 • Replace reheater and waterwall tube sections on Belle River Unit 2 (\$8
24 million) to proactively address high potential failure areas forecasted by

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- 1 the Boiler Tube Failure Reduction team.
- 2 • Install DCS (distributed control system) at Greenwood (\$15 million)
- 3 • Upgrade precipitator on Trenton Channel 8 (\$2 million) to improve the
- 4 environmental performance of the unit.

5

6 Major projects being developed for implementation in 2008-11 include:

- 7 • Upgrade precipitator on Monroe Unit 3 (\$20 million) to improve the
- 8 environmental performance of the unit and allow the SCR being
- 9 installed to operate more efficiently.
- 10 • Replace waterwall tube sections on St. Clair Unit 7 and River Rouge
- 11 Unit 3 (\$5 million each) to proactively address high potential failure
- 12 areas forecasted by the Boiler Tube Failure Reduction team.
- 13 • Replace the reheaters on Monroe Unit 1, Unit 2, and Unit 3 (\$15 million
- 14 each) to proactively address high potential areas component
- 15 forecasted by the Boiler Tube Failure Reduction team.
- 16 • Replace waterwall tube sections on Monroe Unit 3 and Unit 4 (\$5
- 17 million each) to proactively address high potential failure areas
- 18 forecasted by the Boiler Tube Failure Reduction team.
- 19 • Replace HP (High Pressure) Turbine at Harbor Beach (\$8 million).

20

21 Investing capital dollars today has a positive effect on equipment availability

22 in the future. For example, the turbine efficiency improvements at Monroe

23 will be sustained for a longer period of time and should extend the interval

24 between major turbine overhauls to over 10 years. This will help ensure

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1 better availability of this economic base-load plant for the Company's
2 electric customers.

3

4 **Q. What were Fossil Generation's Capital Expenditures for the 2003 –**
5 **2005 period?**

6 A. During this period Fossil Generation invested \$322.6 million in capital. The
7 breakout by year by category follows:

8

9 **2003 Capital Investment.** There was a total of \$85.8 million in capital
10 invested in Detroit Edison's generation portfolio in 2003. Major investments
11 were:

- 12 • \$4.1 million to replace the Trenton Channel Unit 9 hot reheat piping.
- 13 • \$4.9 million for Belle River Unit 1 generator rotor rewind which had
14 reached end of life.
- 15 • \$7.1 million and \$3.1 million for Monroe Unit 3 and Unit 2, respectively,
16 steam path modifications for the HP and LP turbines. This was in
17 support of the dense pack rotor installations which provided increased
18 capacity and improved heat rate, lowering the average fuel cost to run
19 these units.
- 20 • \$4.1 million for Trenton Channel Unit 9 generator stator coil
21 replacement.

22

23 **2004 Capital Investment.** There was a total of \$115 million in capital
24 invested in the Company's generation portfolio in 2004. The primary driver

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1 for this increase from 2003 is due to the \$26.8 million increased level of
2 investment in the boiler and turbine category. This increased investment
3 was a direct result of our Boiler Tube Failure Reduction team's identification
4 of the critical needs to improve boiler reliability and matching this to the
5 equipment maintenance plans. Details of this investment will be discussed
6 in the following section. Major generating plant investments in 2004 were:

- 7 • \$2.7 million and \$2.0 million, respectively to replace main steam lines
8 on St. Clair Unit 3 and Unit 4 respectively. This piping was reaching
9 end of life and was proactively replaced based on our testing and
10 predictive maintenance program.
- 11 • At Monroe: \$18.6 million and \$14.1 million to perform the HP and LP
12 steam path modifications on Unit 2 and Unit 3 respectively. The dense
13 pack installation was completed on Unit 3. The Unit 2 amount was for
14 a progression payment for final installation in 2005. \$5.8 million to
15 replace Monroe Unit 1's main unit transformer. The following work was
16 all on Unit 3 as part of its periodic outage: \$9.3 million for air heater
17 replacement, \$6 million for superheater pendant replacement,
18 proactively addressing high potential failure areas forecasted by the
19 Boiler Tube Failure Reduction team.

20

21 **2005 Capital Investment.** There was a total of \$121.8 million in capital
22 invested in the portfolio in 2005. Major investments were:

Line
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- 1 • \$14.6 million to upgrade Monroe's Unit 2 precipitator allowing the plant
- 2 to better meet particulate matter emissions, improving its ability to
- 3 optimize its generation.
- 4 • \$7.1 million to complete the dense pack turbine installation on Monroe
- 5 Unit 2, which provided increased capacity and improved heat rate,
- 6 lowering the average fuel cost to run this unit.
- 7 • \$7.2 million to replace the secondary superheater pendants and \$4.4
- 8 million to replace waterwall tube sections on Monroe Unit 2, proactively
- 9 addressing high potential failure areas forecasted by the Boiler Tube
- 10 Failure Reduction team.
- 11 • \$6.1 million for superheater and reheater pendant replacement at
- 12 Greenwood, proactively addressing high potential failure areas
- 13 forecasted by the Boiler Tube Failure Reduction team.
- 14 • \$3.9 million for reheater tube bundle replacement, and \$3.7 million for
- 15 boiler bullnose replacement on River Rouge Unit 3, proactively
- 16 addressing high potential failure areas forecasted by the Boiler Tube
- 17 Failure Reduction team.
- 18 • \$2.9 million to replace River Rouge Unit 3's main unit transformer and
- 19 \$1.6 million at Trenton Channel to replace coal mill silos.
- 20
- 21
- 22
- 23
- 24

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1

Part III

2

Operating and Maintenance Expenses

3

4 **Q. Does Fossil Generation employ a specific procedure when preparing**
5 **its O & M budget?**

6 A. An iterative process is used to develop Detroit Edison's Fossil generation
7 O&M budget whereby inputs from the departments and the plants are
8 collected based on budget guidelines developed at the corporate level.
9 Besides using historical data and escalation rates, adjustments are made
10 based on the proposed periodic outage schedule, condition of equipment,
11 known maintenance needs, required availability and reliability levels and
12 other specific items or activities to be expensed. The periodic outage plan,
13 which is an important part of the Fossil Generation O & M budget process,
14 is developed based on the required maintenance for each generating unit
15 and the previous two years actual maintenance. To establish the most
16 economic schedule based upon system constraints, a production costing
17 simulation is performed and the maintenance scheduler model run to
18 determine the most economic plan. This revised plan is again reviewed by
19 each plant and approved or modified as necessary. The plan is then
20 presented to management for final review and approval. It should be noted
21 that this plan might be further modified from time to time to accommodate
22 changes in system operation or system needs. O & M budget development
23 also includes factors such as reduction of material costs, optimization of
24 overtime, reduction of contractor costs, purchase of equipment and

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1 optimization of the workforce. Detailed reviews of the individual submittals
2 are reviewed with the plant staffs and then as a group. The overall objective
3 is to continually reduce costs consistent with reliable and economic
4 operation of the Company's generation assets and anticipated purchased
5 power availability and cost.

6

7 **Q. What is the Performance Excellence Process?**

8 A. In 2005 DTE Energy started the development of its Performance Excellence
9 Process. The purpose of this multi-year effort is to improve both our
10 performance and cost structure. Fossil Generation is engaged in the
11 Performance Excellence Process (PEP), like all other organizations in DTE
12 Energy. Our overall plan is to identify opportunities to improve performance
13 and cost structure over the next several years and to sustain those through
14 Fossil Generation's ongoing continuous improvement and productivity
15 efforts. The foundation of this overall effort is the DTE Operating System.
16 This continuous improvement system is based on Lean and Six Sigma tools
17 and principles and will be a standard way we look at running our operations.

18

19 Performance for Fossil Generation is defined as overall equipment reliability
20 and availability. Cost structure includes our overall operating costs:
21 operations, maintenance, fuel handling and fuel.

22

Line
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1 **Q. Can you describe the general nature of how you determined the**
2 **improvements the Performance Excellence Process will be able to**
3 **deliver?**

4 A. The Company's Performance Excellence Process is targeting improving our
5 overall performance and cost structure. Implementation of this in Fossil
6 Generation entails a detailed look at the current state of all of our business
7 operations (equipment and unit operations, maintenance, engineering
8 support, fuel handling, merchant operations and general support), compares
9 this to other best in class operations within our industry and identifies
10 opportunities for us to improve. We then develop specific projects and
11 supporting implementation plans to realize these targeted improvements.
12 The general nature of these improvements will be driven by improving
13 business processes, improving work practices, and better resource
14 allocation, modeling best practices identified within industry. The net result
15 of this will be overall better performance and improved operating cost
16 structure.

17

18 **Q. Would you please explain Exhibit DE-16, Schedule F5-2, page 1 of 6,**
19 **"O&M Expense – Power Generation Summary (non-Nuclear), Years**
20 **2005 - 2011"?**

21 A. Exhibit DE-16, Schedule F5-2, page 1 of 6 provides a summary of Power
22 Generation (excluding the Fermi plant) operating and maintenance
23 expenses for 2005 (actual) and 2006 – 2011 forecast.

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- 1 • Line 2 thru 7, "Total Support Organizations", includes the major
- 2 support organizations for Power Generation: Energy Resources
- 3 (Environmental Management & Resources and Energy Resources
- 4 Staff), Fuel Supply Organization-Support, and Fuel Supply
- 5 Organization-Fuel Handling.
- 6 • Line 10, "Fossil Gen Base O&M (adj.)", includes the operating and
- 7 maintenance costs at all the Company's generation plants (excluding
- 8 Fermi), and central group support for operations and maintenance.
- 9 • Line 12, "Total SCR and Scrubbers", includes the forecasted
- 10 operations and maintenance costs for the major environmental control
- 11 technology equipment being installed at the Company's fossil steam
- 12 plants.
- 13
- 14 **Q. Can you explain Exhibit DE-16, Schedule F5-2, page 3 of 6, "O&M**
- 15 **Expenditures – Fossil Generation, Years 2005 – 2011"?**
- 16 A. Exhibit DE-16, Schedule F5-2, page 3 of 6, "**O&M Expenditures – Fossil**
- 17 **Generation, Years 2005 – 2011"** presents the 2005 (actual) and 2006-
- 18 2011 estimated Fossil Generation Operations and Maintenance Expenses
- 19 for this period.
- 20 • Lines 2 thru 14 present the 2005 actual Fossil Generation Operations
- 21 Expenses.
- 22 • Lines 16 thru 29 present the 2005 actual Fossil Generation
- 23 Maintenance expenses.

Line
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- 1 • Line 35, "Inflation Adjustment" reflects the estimated inflation dollar
- 2 impact for the period 2006 through 2011 using the inflation adjustment
- 3 factor shown on Line 52.
- 4 • Line 39, "PEP Savings" includes the estimated amount of O&M
- 5 savings Fossil Generation expects to realize each year as a result of
- 6 our Performance Excellence Process (PEP) efforts.
- 7 • Line 42 "2006-Additional Periodic work", shows the additional amount
- 8 of periodic and planned outage work we have forecasted for 2006 over
- 9 our 2005 level. The work performed is discussed later.
- 10 • Lines 43 "SCR Environmental cost" is the forecasted amount of
- 11 additional expense required to operate and maintain the new SCRs
- 12 installed (or will be installed over this period) at our plants.
- 13 • Line 44 "Scrubbers Environmental cost" is the forecasted amount of
- 14 additional expense required to operate and maintain the new
- 15 Scrubbers we will install over this period at our plants.

16

17 **Q. What are your thoughts concerning the level of Fossil Generation's**
 18 **overall O&M expenses from 2005 through 2011?**

19 **A.** In 2005, Fossil Generation spent a total \$307.8 million in overall O&M,
 20 \$100.3 million in operations (those activities focused on operating the units
 21 and generating electricity) and \$207.5 million in maintenance (those
 22 activities spent both in executing planned maintenance work for Fossil
 23 Generation units and repairing items that force our units to shutdown or

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1 operate in a limited capacity). Fossil Generation executed three major
2 periodic outages during this year, which I will discuss later in the testimony

3

4 In 2006, Fossil Generation is expecting to spend \$317.5 million in overall
5 O&M. With the exception of an additional \$11 million for additional periodic
6 maintenance work, Fossil Generation is estimating our overall O&M
7 expenses to be below our 2005 level. This is driven by the Company's
8 Performance Excellence Process actions. The major periodic outages and
9 associated scopes of work for 2006 are:

- 10 • St. Clair Unit 1: turbine overhaul, generator repairs, installation of a
11 new DCS (distributed control system), main steam line replacement,
12 boiler tube repairs and replacement.
- 13 • St. Clair Unit 2: turbine overhaul, generator repairs, installation of a
14 new DCS (distributed control system), main steam line replacement,
15 boiler tube repairs and replacement.
- 16 • Monroe Unit 1: precipitator upgrade, turbine overhaul, boiler tube
17 repairs and replacement.
- 18 • Monroe Unit 3: precipitator repairs, boiler tube repairs and
19 replacement, SCR tie in.
- 20 • River Rouge Unit 2: turbine rotor replacement, boiler tube repairs and
21 replacement, condenser retube.

22

23 For 2007, Fossil Generation is forecasting to spend \$296.2 million in overall
24 O&M. This level is below our forecast for 2006, driven primarily by the

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1 Company's Performance Excellence Process initiatives both effecting an
2 entire fiscal year and the expansion of the process.

3

4 For the period 2008 through 2011 Fossil Generation forecasts its O&M
5 spend to range from \$297.1 million to \$332.6 million. On an inflation
6 adjusted basis, this forecast is flat, driven by the Performance Excellence
7 Process and by the overall continuous improvement efforts to reduce
8 overall cost structure. The major item that prevents Fossil Generation from
9 realizing an inflation adjusted decrease is the forecasted added expense of
10 operating and maintaining the additional environmental equipment (SCRs
11 and Scrubbers) being installed over this period. We currently forecast this
12 expense to grow from almost \$3 million in 2007 to more than \$16 million by
13 2011.

14

15 **Q. What are your thoughts concerning the level of "Fossil Operations"**
16 **expenses?**

17 A. These expenses are shown to stay fairly level over the forecast period at
18 2005 levels adjusted for inflation and, in my opinion, are reasonable,
19 prudent and necessary.

20

21 **Q. How are maintenance expenses categorized?**

22 A. Overall Maintenance is broken into two basic categories: non-periodic and
23 periodic outages. Non-periodic is that standard "day-to-day" work that is
24 done to maintain the plant equipment. This includes inspections, servicing,

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1 and minor maintenance that does not require the unit to be taken offline to
2 complete. This also includes forced outages.

3

4 Periodic outage work requires the unit to be off line and is executed in a
5 highly planned manner. Typical work during these periods includes major
6 boiler work (tube/component repair and replacement), turbine overhauls and
7 major environmental equipment installations and upgrades.

8

9 **Q. Has the average length of periodic outage durations been constant?**

10 A. Integral to all of our maintenance planning is our periodic outages. As
11 described earlier, we have shown a steady ability over the past 3 years to
12 decrease the duration of our periodic outages while performing the planned
13 scope at a similar or reduced cost.

14

15 Notwithstanding our progress, we have seen an increase in our non-
16 periodic and periodic outage maintenance spend over the period 2003-
17 2005. As an example, our periodic O&M spend went up over 36% (\$36.8
18 million in 2003 to \$49.8 million in 2005), while overall capital Investment
19 increased by 42% (\$85.8 million in 2003 to \$121.8 million in 2005). This is
20 driven by the ongoing reliability challenges caused by the age of Detroit
21 Edison's generation portfolio, by an expanded maintenance plan proactively
22 targeting critical reliability issues in the portfolio, and systemic
23 improvements in our periodic maintenance planning process designed to
24 increase our ability to efficiently and effectively execute planned outages.

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2 Going forward, the plan for 2007 and beyond is to reduce major periodic
3 outage length to approximately eight weeks for large base-loaded units
4 (greater than 750 Megawatts) and approximately seven weeks for smaller
5 intermediate load units. These outages will occur on a regular interval every
6 four years. Additionally, each unit will have a minor outage (three or four
7 weeks) every two years between major periodic outages. This disciplined
8 periodicity and continuous improvement focus is designed to result in
9 improved reliability and overall lower costs.

10

11 **Q. What are your thoughts concerning the level of “Fossil Maintenance”**
12 **expenses?**

13 A. For Non-periodic Maintenance expenses for our base-load plant equipment,
14 despite an aging generation plant portfolio, we are forecasting relatively flat
15 expenditures for general maintenance activities for the period 2007-2011.
16 On an inflation adjusted basis, we forecast our general maintenance
17 expenses could actually decline as a result of our ongoing continuous
18 improvement program and as a result of our Performance Excellence
19 Process actions and plans. However, the age and condition of our units is
20 the driver for us being able to realize this improvement. This requires that
21 we sustain the right level of investment in upgrading and replacing our
22 equipment going forward throughout this period and beyond. As our
23 equipment ages, our ability to achieve this objective will continue to be
24 challenged.

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1

2

An additional expense that challenges our ability to achieve this flat spend is our forecasted expense for operating and maintaining the major environmental equipment we are installing in the system (SCRs and FGDs (Flue Gas Desulfurization)/Scrubbers). Beginning with a spend level of almost \$3 million in 2007, we forecast this expense growing to over \$16 million by 2011 as more equipment comes on-line. Mr. Boyd is providing details on the installation of major environmental control technology on our plants.

10

11

We also see a risk in increased material costs. Many of the materials used in our major equipment have seen drastic, double digit increases in prices over the last few years. Examples of this are: 66% increase for steel piping, 25% increase for boiler tubes, and 40% increase for base chemicals. Because of this we may see increases in overall costs above current CPI projections for 2007 to 2011 of 2.4% to 2.6% that could result in an additional \$4 million to \$5 million in O&M costs per year as well as up to \$2 million in additional capital expenses.

19

20

For periodic O&M, as the Company continues to refine the equipment reliability plan and account for impacts of environmental projects on operations and maintenance, and the impact of aging equipment, we see variability in our periodic O&M, driven by these factors and the required periodicity for our units. Factors impacting our periodic outage O & M

24

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1 expense include major turbine overhauls, boiler tube replacements, air
2 heater replacements, and environmental equipment installations and
3 upgrades. For the period 2007 through 2011, Fossil Generation forecasts
4 spending between \$60 million to \$70 million annually to support our periodic
5 maintenance plan. Our current plan has the following units scheduled for
6 major periodic outages during this period:

- 7 • 2007: Belle River Unit 1, Harbor Beach, St. Clair Unit 6, St. Clair Unit 7,
8 and Trenton Channel 9.
- 9 • 2008: Belle River Unit 2, Greenwood, St. Clair Unit 3, and Monroe Unit
10 4.
- 11 • 2009: St. Clair Unit 7, Monroe Unit 3, River Rouge Unit 3 and Trenton
12 Channel Unit 8.
- 13 • 2010: St. Clair Unit 6, Monroe Unit 1, and Monroe Unit 2.
- 14 • 2011: Belle River Unit 1, Harbor Beach, and Trenton Channel Unit 9.

15

16 **Q. Can you explain Exhibit DE-16, Schedule F5-2, page 6 of 6, “Operating**
17 **Expenses – Electric Total Fossil Fuel Handling Expense, Years 2005 -**
18 **2011”?**

19 A. Line 1, “Fossil and Support Organizations”, covers the major fuel handling
20 expenses at the power plants and their support groups.

21

22 Line 3 “Accounting Adjustments (MPPA)” includes the credits for
23 reimbursement of fuel handling expenses at Belle River Power Plant per the

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1 Company's contractual agreement with the Michigan Public Power Agency
2 (MPPA).

3

4 Line 7, "Fuel Supply" includes unit train as well as corporate Fuel Supply
5 expenses. These items are supported in Mr. Lapplander's testimony.

6

7 Line 9, "MERC", covers expenses of the Midwest Energy Resources
8 Company or MERC, which is also supported by Mr. Lapplander.

9

10 Line 13, "MERC Fuel Handling Adjustment", covers expenses for MERC
11 fuel handling, which is supported in Mr. Lapplander's testimony.

12

13 **Q. What are your thoughts concerning the level of "Fossil Fuel Handling"**
14 **expenses?**

15 A. These expenses are shown to stay fairly level over the forecast period at
16 2005 levels adjusted for inflation and, in my opinion, are reasonable,
17 prudent and necessary.

18

19 **Q. What are your thoughts on the level of Detroit Edison's historical and**
20 **projected capital and O & M expenses as well as the generation plant**
21 **availability forecast contained in your testimony?**

22 A. Despite many challenges, Detroit Edison has been reasonable and prudent
23 in its past capital and O & M expenditures as discussed in my testimony
24 (see Exhibit DE-16, Schedule F5-2). Furthermore, the projections for such

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1 expenditures for 2006 and beyond are also reasonable and prudent (see
2 Exhibit DE-16, Schedule F5-2). In addition, the projected generation plant
3 availabilities for 2006 and beyond are reasonable and prudent considering
4 the age of the Company's generating plants, and the significant impacts on
5 plant operations resulting from the installation of environmental control
6 equipment (see Exhibit DE-16, Schedule F6-1). All in all, I believe that
7 Detroit Edison has fully justified its request for recovery of the fossil plant
8 expenses that I have set forth in my testimony and exhibits.

9

10 **Q. In addition to the O&M cost efficiencies explained earlier, what are**
11 **your other expectations as a result of the Performance Excellence**
12 **Process?**

13 A. We are currently forecasting an ability to improve overall gross margin
14 performance as a result of the Performance Excellence Process.

15

16 **Q. What is gross margin?**

17 A. Gross margin is the difference between the market price of power Detroit
18 Edison receives in the MISO market place (this varies every hour for every
19 day) and the variable cost it takes to produce that power (primarily our fuel
20 cost). Any improvement in gross margin provides value to Detroit Edison's
21 customers.

22

23 **Q. What are you doing as part of Performance Excellence to impact gross**
24 **margin?**

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1 A. Examples of the actions we are taking that will allow us to improve gross
2 margin are:

3 • Reducing or minimizing the duration of periodic outages, thus
4 decreasing the need for purchased power or for running more
5 expensive units when the affected unit is economical and dispatched
6 in the MISO market.

7 • Reducing or minimizing the duration of forced or unplanned outages,
8 again decreasing the need for either purchased power or running a
9 more expensive unit.

10 • Increasing the efficiency of Detroit Edison's generation units through
11 operator training and equipment improvements, decreasing the
12 amount of fuel required to generate power.

13

14 **Q. What do you expect the value of these gross margin improvements to**
15 **be?**

16 A. The actual realized values will depend on the market price for power and
17 our price for fuel prevailing at the time. We expect that we could see an
18 improvement of up to \$30 million in 2007 with the potential of this growing to
19 \$50 million annually for 2008 and beyond (See Exhibit DE-16, Schedule F5-
20 13). The increases in equipment operating efficiencies contributing to the
21 expected improvement in gross margin is over and above that outlined in
22 my testimony and exhibits. The delivery of the savings will come through
23 the operation of the PSCR process.

24

Line

No.

1 **Q. Does this complete your testimony?**

2 A. Yes, it does.

3