

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
ALDO F. COLANDREA

THE DETROIT EDISON COMPANY
QUALIFICATIONS OF ALDO F. COLANDREA

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1 **Q. What is your name and business address, and by whom are you**
2 **employed?**

3 A. My name is ALDO F. COLANDREA. I am the Manager of Corporate Energy
4 Forecasting, a functional responsibility of the Controller Department. My
5 business address is 2000 Second Avenue, Detroit, Michigan 48226.

6

7 **Q. Please describe your educational experience.**

8 A. I received a Bachelor of Civil Engineering from the University of Detroit in
9 1975. I received a Master of Engineering degree in structural engineering
10 from the University of Detroit in 1976 and a Doctor of Engineering degree,
11 also from the University of Detroit, in 1981.

12

13 **Q. Please describe your professional experience.**

14 A. I was employed at Albert Kahn Associates from 1978 to 1979 as a civil
15 engineer in the Structural Department. I was employed at Giffels
16 Associates, Inc., from 1979 to 1980, as a structural engineer in the
17 Advanced Technology Department. In 1980, I joined the Detroit Edison
18 Company in the Generation Engineering Department as a structural
19 engineer. I was promoted to senior engineer in mid-1981. In December
20 1981, I was transferred to the Enrico Fermi 2 Power Plant where I served as
21 the principal resident engineer for the Field Engineering Department. My
22 responsibilities included the review and approval of field-generated design
23 change documents for all architectural, civil and structural engineering-
24 related construction activities, the disposition of deviation reports and the

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1 review of field-generated design change documents for seismic loading
2 qualification. It also included the administration of a staff of engineers,
3 architects, surveyors and clerks.

4

5 In August 1987 I transferred to the Resources and Facilities Planning
6 Department where my primary responsibilities included assisting the
7 Corporate Energy Forecaster in the development of load forecasts and
8 related activities. My responsibilities increased in this department over time.

9 In December 1993 I was promoted to Corporate Energy Forecaster with the
10 primary responsibility of developing long-range and short-range load
11 forecasts for the Company and other related activities. In November 2000 I
12 was promoted to Manager of Corporate Energy Forecasting with additional
13 responsibilities for developing the economic forecast and next-day
14 forecasting for our merchant operations efforts.

15

16 **Q. Please describe any other related professional experience.**

17 A. Since 1983, I have instructed courses at the University of Detroit in the Civil
18 Engineering and Architectural Departments. This included an economic
19 analysis and decision making course using present-worth analyses and
20 analyses of risk uncertainty. I have been a registered professional engineer
21 in the State of Michigan since 1979 and have been active as an engineering
22 consultant. I am also a registered professional engineer in the States of
23 Ohio, Kentucky and Kansas.

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1 **Q. What are your duties as Manager of Corporate Energy Forecasting?**

2 A. I am responsible for the development of the economic and electric sales
3 forecasting activities for the Detroit Edison Company. These activities
4 include data collection, statistical analysis of data, forecast model building
5 and interaction with other departments on forecast-related activities. It also
6 includes the preparation of long term forecasts (one year or greater), short
7 term (monthly) and next day forecasts. It also includes the preparation of
8 the economic forecast that supports the sales forecast.

9

10 **Q. Are there other responsibilities you have in your capacity as a load**
11 **forecaster?**

12 A. I am a member of the NERC Load Forecasting Working Group, which
13 projects annual demand and generation bandwidths for the U.S. and
14 Canada. I am also a member of the Electric Utility Forecasters Forum
15 (EUFF) that reviews forecasting techniques and forecasting software. I also
16 meet with officials from the state and local governments to discuss the load
17 forecast and related issues, and I make presentations on the load forecast
18 to various Company organizations.

19

20 **Q. Do you have any education or additional training in the field of**
21 **economics, statistics and load forecasting?**

22 A. Yes, I do. As part of my formal education, I have taken numerous courses
23 in probability and statistics, as well as courses in econometrics and
24 economic principles. I have taken various short courses on econometric

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1 modeling of the steel industry and the automotive industry, which are our
2 local base industries. I have also taken courses on non-manufacturing
3 loadshape development and the use of EPRI software, such as COMMEND
4 and HELM.

5

6 **Q. Have you testified previously?**

7 A. Yes, I have. In Detroit Edison's 1993 PSCR Plan hearing, MPSC Case No.
8 U-10103, I sponsored direct testimony supporting the Company's forecast of
9 sales and output. In Detroit Edison's 1994 PSCR Plan hearing, MPSC
10 Case No. U-10427, in Detroit Edison's 1995 PSCR Plan hearing, MPSC
11 Case No. U-10702, in Detroit Edison's 1996 PSCR Plan hearing, MPSC
12 Case No. U-10965, in Detroit Edison's 1997 PSCR Plan hearing, MPSC
13 Case No. U-11175, in Detroit Edison's 1998 PSCR Plan hearing, MPSC
14 Case No. U-11528, in Detroit Edison's 1999 PSCR Plan, MPSC Case No.
15 U-11800, in Detroit Edison's 2000 PSCR Plan, MPSC Case No. U-12121,
16 and in Detroit Edison's 2005 PSCR Plan, MPSC Case No. U-14275, I also
17 sponsored direct testimony supporting the Company's forecast of sales and
18 output. I also sponsored similar testimony in Detroit Edison's main electric
19 rate hearing, MPSC Case No. U-10102, in Detroit Edison's Request for
20 Proposals Case, MPSC Case No. U-10292, and in the Company's most
21 recent main electric rate hearing, MPSC Case No. U-13808.

22 .

THE DETROIT EDISON COMPANY
DIRECT TESTIMONY OF ALDO F. COLANDREA

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1 **Q. Mr. Colandrea, what is your responsibility in this case?**

2 A. My responsibility is to provide Detroit Edison's current electric sales and
3 system output forecast for the period 2006-2015 and to explain the basis for
4 this forecast. I also sponsor the Company's historical electric sales and
5 system output for the period 2001 through 2005. I am sponsoring
6 Schedules F1-1 through F1-7 of Exhibit DE-16.

7

8 **Q. Can you please explain the Company's current electric load forecast?**

9 A. The current forecast of annual sales and system output for Detroit Edison's
10 service area, for the years 2006 through 2015, is described in Exhibit DE-
11 16, Schedule F1-2, Page 1 of 4. This schedule also includes historical data
12 back to 2001. The current forecast of full service, also described as
13 "bundled", sales and output is described in Exhibit DE-16, Schedule F1-2,
14 Page 2 of 4 and the current forecast of Electric Choice sales is described in
15 Exhibit DE-16, Schedule F1-2, Page 3 of 4.

16

17 **Q. Are all forecasted values listed in Exhibit DE-16, Schedule F1-2, based**
18 **upon Edison's current official load forecast?**

19 A. Yes.

20

21 **Q. Can you explain Exhibit DE-16, Schedule F1-1?**

22 A. Exhibit DE-16, Schedule F1-1, shows the major economic parameters used in
23 the forecast models. The years 2001 through 2005 are historical. The years
24 2006 through 2015 are the Company's forecast.

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1

2 **Q. Can you explain Exhibit DE-16, Schedule F1-2?**

3 A. Exhibit DE-16, Schedule F1-2, shows annual sales for the four major
4 customer classifications: Residential, Commercial, Industrial, and Other. The
5 years 2001 through 2005 are historical. 2006 is a combination of two months
6 temperature-normalized actuals and 10 months forecast and 2007 through
7 2015 are forecast. Total sales and net system output are shown. Service
8 area sales are further broken down into bundled and Electric Choice sales.

9

10 Page 4 of 4 of Schedule F1-2 shows monthly bundled sales for 2006.
11 January and February sales are temperature-normalized actuals and March
12 through December sales are projected based on the forecast model HELM.

13

14 **Q. Can you explain Exhibit DE-16, Schedule F1-3?**

15 A. Exhibit DE-16, Schedule F1-3, shows the annual net system output, annual
16 peak demand and annual load factor for both Detroit Edison's service area
17 and bundled sales levels. Detroit Edison's bundled sales are determined by
18 subtracting Electric Choice sales from Detroit Edison's service area sales. A
19 10% and 90% confidence band on the summer peak demand is also provided
20 for both Detroit Edison's service area and bundled sales levels.

21

22 **Q. Can you explain Exhibit DE-16, Schedule F1-4?**

23 A. Exhibit DE-16, Schedule F1-4, shows the customer class contribution to both
24 Detroit Edison's service area and bundled peak demand, class load factor at

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1 time of summer peak and hour of summer peak. The summer peak demand
2 typically occurs at 5 P.M. for Detroit Edison's service area. The bundled peak
3 demand is forecasted to occur at 5 P.M. for 2006 through 2015.

4

5 **Q. How are the customer class contributions to system peak demand**
6 **forecast?**

7 A. Historical customer class contributions to the system peak demand are
8 calculated by Corporate Energy Forecasting based on loadshape data.
9 Forecast contributions are calculated by the Hourly Electric Load Model
10 (HELM), an EPRI-developed model.

11

12 **Q. Can you explain Exhibit DE-16, Schedule F1-5?**

13 A. Exhibit DE-16, Schedule F1-5, shows the monthly Detroit Edison service area
14 peak demand and bundled peak demand for each year of the forecast. The
15 monthly peak demands are consistent with the annual projections given in
16 Exhibit DE-16, Schedule F1-3.

17

18 **Q. What does Exhibit DE-16, Schedule F1-6 show?**

19 A. This schedule is a tabulation of saturations of air conditioners and electric
20 water heaters for various years during the period 2001 through 2005, and
21 projected saturations from 2006 through 2015. At present, approximately 76%
22 of Edison's residential class customers own central air conditioners and
23 approximately 22% have one or more room air conditioners.

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1 **Q. Can you explain Exhibit DE-16, Schedule F1-7?**

2 A. Exhibit DE-16, Schedule F1-7, provides Detroit Edison's service area and
3 bundled load duration curves forecast for 2006 through 2015. The first
4 column shows varying percentages of the annual peak demand and is
5 applicable to all forecast years. The ten succeeding columns list the number
6 of hours in each forecast year that the percentage of annual peak demand is
7 exceeded. The maximum values of the forecasted annual peak demand are
8 listed in line 41. HELM was employed to develop the load duration curves.
9 Inputs to HELM included the forecasted energy sales parameters and current
10 Detroit Edison loadshape data for each major component of total energy
11 sales.

12

13 **Q. What is the compound annual growth rate of the Detroit Edison service**
14 **area and bundled electric sales over the forecast period?**

15 A. Detroit Edison's service area sales are forecast to increase from 52,686 GWh
16 in 2005 to 57,512 GWh in 2015. This represents a 0.9% average annual
17 increase in sales. Bundled sales are forecast to increase from 46,049 GWh in
18 2005 to 53,512 GWh in 2015. This represents a 1.5% average annual
19 increase in sales. The forecast of Electric Choice sales, which is heavily
20 dependent on the market clearing price (MCP) forecast, is expected to level
21 off at 4,000 GWh in the forecast period. The methodology used to forecast
22 Electric Choice sales is described later in my testimony. The difference in the
23 growth rates between Detroit Edison's service area sales and Detroit Edison's
24 bundled sales is due to the forecast of Electric Choice sales.

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2 **Q. What has been the compound annual growth rate of Detroit Edison's**
3 **service area sales over the last five years?**

4 A. On a temperature-normalized basis, service area sales increased from 52,178
5 GWh in 2001 to 52,686 GWh in 2005. This represents a 0.2% average
6 annual increase in sales. The forecasted growth rate from 2006 to 2015 is
7 higher than the historical sales trend due to the recession that occurred in
8 2001.

9

10 **Q. What procedures are followed by Detroit Edison in developing an**
11 **electric sales and demand forecast?**

12 A. Official forecasts of electric sales and peak demand within Detroit Edison's
13 service area are developed semi-annually, and as necessary. Corporate
14 Energy Forecasting develops load forecasts with the active participation of
15 several other organizational units in the Company.

16

17 **Q. What is the general approach used in developing this forecast of Detroit**
18 **Edison's service area electric sales and system output?**

19 A. The general approach reflects widely accepted industry standards for energy
20 forecasting. It has also provided reasonable forecasts for energy sales with,
21 on average, small variances from historical annual sales.

22

23 For most sectors of the forecast, electric sales levels are related to the various
24 economic, technological, regulatory, and demographic factors that have

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1 affected them in the past. The procedure begins with the assembly of
2 historical data relating to the various sectors of the forecast. These data are
3 examined and the factors that are statistically significant in explaining electric
4 sales are identified using regression techniques. Forecast models are
5 developed employing the appropriate regression equations.

6

7 Economic driving variables (explanatory factors), such as steel production, car
8 and truck production, non-manufacturing employment, and others, are entered
9 into the forecast models to calculate projected future sales levels.

10

11 **Q. What is the present condition of the national economy upon which the**
12 **forecast is based?**

13 A. The national economy is gaining momentum after growing only 1.7% in the
14 fourth-quarter of 2005. Fourth-quarter growth was unusually weak because,
15 in part, of a 0.8% decline in government spending and a mere 0.9%
16 increase in personal consumption. Some of the slower growth in personal
17 consumption can be attributed to spent-up demand on the part of
18 automobile buyers following late-summer sales incentives. Consumer
19 spending finished the fourth quarter more strongly than it had started and is
20 growing moderately in early 2006. Government spending is also growing
21 more strongly. Hurricane rebuilding efforts in the Gulf states have boosted
22 business investment.

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1 After a string of stellar years, residential fixed investment has slowed in
2 response to higher prices and interest rates. As with the commercial sector,
3 residential construction will get a localized stimulus in the Gulf states.

4

5 High cash reserves fueled 5.0% growth in business equipment and software
6 spending in the fourth quarter, and 2006 seems to be starting on the same
7 note. Employment is growing at a pace close to 2005's 1.5%.

8

9 Substantial buyer incentives in the late summer and early fall of 2005 cut
10 into late fall auto sales. Buyer interest recovered in December, 2005, and
11 sales for the month reached 17.2 million vehicles (seasonally adjusted
12 annualized rate). Riding December's wave, January, 2006, sales climbed to
13 a seasonally adjusted annual rate of 17.6 million vehicles. Foreign vehicles
14 continue to increase their market share, which stood at 44.4% in December
15 of 2005 and averaged 42.5% over the full year of 2005.

16

17 Political events in Iran, Nigeria, and Venezuela are sending petroleum
18 prices on a roller-coaster ride. Demand for petroleum-based products has
19 been depressed by high prices, hurricane damage, airline consolidations,
20 and a relatively mild winter. The lower demand has in turn moderated or
21 reversed price increases of crude and refined products.

22

23 In May of 2006, the Federal Reserve Bank's Federal Open Market
24 Committee voted to increase the federal funds rate by 25 basis points to

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1 5.00%. In explaining its move, the Committee cited strong economic growth
2 as well as the potential for inflation from increased resource utilization and
3 elevated energy prices.

4

5 The dollar strengthened on international currency markets in the second
6 quarter of 2005, as the United States' relatively high interest rates increased
7 the demand for American currency. The dollar has now fallen from last
8 year's high mark. A weakening dollar will make imports relatively more
9 expensive to Americans and exports relatively cheaper to overseas
10 customers.

11

12 **Q. What is the outlook for the economy at the national level in 2006?**

13 A. Real gross domestic product will grow by 3.4% in 2006. Solid employment
14 gains and faster wage increases will help drive the expansion. However,
15 high consumer debt and a softening housing market will slow the rate of
16 growth in the second half of the year.

17

18 Business investment is providing a major contribution to economic growth.
19 Conditions exist for investment to rise 10.0% to 11.0%. In fact, accelerated
20 business investment will offset a decline in construction of 3.0% to 3.5%.

21

22 Industrial production, as measured by the Federal Reserve Bank's Industrial
23 Production Index, will rise 3.0%. Although manufacturing employment is
24 falling, productivity improvements more than compensate for the decline.

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1 For example, non-farm business productivity increased by 2.9% in 2005 and
2 will rise by 2.2% to 2.4% in 2006.

3

4 Disposable income, the amount remaining after wage-earners have met
5 personal tax obligations, will increase by 3.4%. Personal consumption
6 expenditures, the actual and imputed expenditures of households, will rise
7 by 3.2%. Increasing employment and per capita income combine to push
8 this number higher.

9

10 Rising mortgage rates and home prices will slow the housing market. The
11 Mortgage Bankers Association forecasts that the 30-year fixed rate
12 mortgage will average 6.5% in 2006. A stimulus from the rebuilding of
13 hurricane-damaged Gulf states will partially offset this trend. Forecasting
14 firm Global Insight predicts that Gulf recovery will add 150,000 new housing
15 starts over the next three or four years.

16

17 The softer housing market is reducing personal consumption growth two
18 ways. When housing rapidly appreciated in value, homeowners quickly
19 became wealthier and felt comfortable spending heavily from current
20 income. As growth in housing prices moderates, this wealth effect is
21 diminishing. Second, falling interest rates made home refinancing
22 economical, and roughly one-third of funds from refinancing found its way
23 into personal consumption. As the rate rises, it cuts into refinancing and,
24 correspondingly, personal consumption.

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Q. What is the outlook for the Detroit area economy in 2006?

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23

A. Unit production of light vehicles in the Detroit area will decline by 1.6% in 2006. Detroit's product mix contains a number of SUV models whose popularity is waning. Nevertheless, the impact of the decline is not as significant as the number suggests, since production increased by 3.6% in 2005.

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1 Detroit area employment, which hasn't increased since 2000, will decline by
2 1.1% in 2006. The domestic automotive industry's struggle continues to
3 undermine Southeast Michigan's economy.

4

5 Non-manufacturing jobs in the Detroit area, which grew by 0.7% in 2005
6 after declining for four consecutive years, will fall by 1.5%. The dominant
7 size of the service sector makes this the single largest contribution to the
8 overall loss of jobs.

9

10 Southeast Michigan's population will increase by 0.3% in 2006. This is
11 consistent with historical growth rates. Livingston County is experiencing the
12 area's strongest percentage growth.

13

14 Raw steel production will rise by 0.3% in 2006 despite falling local unit
15 vehicle production. Strong global demand will keep local steelmakers' order
16 books full, even though fewer cars and trucks are rolling off area assembly
17 lines.

18

19 **Q. What is the inflation outlook for the next five years compared to the**
20 **last five?**

21 A. The average increase in the Consumer Price Index, (CPI), for All Urban
22 Consumers for 2001-2005 was 2.6%. For 2006-2010, it will be 2.5%.
23 Increasing supplies of petroleum-based energy and enhanced energy
24 efficiency are leading this slight decline in the CPI. Price increases not

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1 related to petroleum-based energy will contribute to generally higher prices.
2 These increases arise from demand and cost pressures, as well as the
3 growing money supply.

4

5 **Q. What are the risks to the local economic forecast?**

6 A. Considerable downside risk exists for Southeast Michigan's economy.
7 Foremost threats to the region's prosperity are high petroleum prices, a
8 weak housing market, and falling production at local automobile plants.

9

10 Petroleum prices are particularly troublesome. While petroleum plays an
11 instrumental role in the global and national economies, it is uniquely
12 important to Southeast Michigan because of the automobile industry's
13 prominence. When higher petroleum prices translate into higher end-use
14 energy prices, Southeast Michigan's consumers, like their counterparts
15 across the nation, struggle with the burden. However, costlier petroleum
16 delivers an additional blow to the region by undermining its automobile
17 industry. In particular, higher gasoline prices cut into the sales of larger,
18 fuel-hungry vehicles—the big SUVs and pickup trucks that have buoyed
19 profit margins of the domestic automakers.

20

21 Steady growth in world oil demand outstrips increases in world spare oil
22 production capacity, thus assuring high prices through 2006. Add to this
23 fundamental market condition the political instability that haunts numerous
24 oil-producing nations, and the probability of upward price spikes escalates.

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1 A flare-up in saber rattling or domestic unrest in any corner of the oil-
2 producing world could send prices sharply upward.

3

4 The housing market is slowing down nationally, but, as with energy prices,
5 the auto industry multiplies the effect within Southeast Michigan. The total
6 number of housing permits issued in the region's three major Metropolitan
7 Statistical Areas—Ann Arbor, Detroit-Warren-Livonia, and Monroe—
8 tumbled by 29.6% in 2005. Along with the higher interest rates and
9 elevated home prices that affect the entire nation, auto industry job cuts
10 continue to pummel local housing sales. Non-farm employment for the
11 three MSA's declined 0.2% in 2005, but the threat of job loss effectively
12 deters many more potential buyers from taking out a mortgage. As long as
13 the specter of significant layoffs threatens the auto industry, local housing
14 will remain vulnerable to sharp declines. A reduction in housing activity will
15 propagate through the local economy, taking down sales of furniture,
16 appliances, home furnishings, and related goods and services.

17

18 Automobile production by the domestic Big Three, the lynchpin of Southeast
19 Michigan's economy, is embattled on two fronts: one, high gasoline prices,
20 the other, encroaching foreign competition.

21

22 In recent years, the Big Three have relied heavily on light truck sales to
23 boost their profits. According to consulting firm Global Insight, in 2005,
24 51.5% of the region's vehicle production, as measured by units produced,

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1 came from light trucks, compared to 46.0% for the rest of the nation. As
2 gasoline prices send buyers to smaller, more fuel-efficient vehicles, local
3 production correspondingly suffers.

4

5 Southeast Michigan's economic well-being rides the ups and downs of
6 marketing wars between the Big Three and their foreign competitors. Since
7 peaking at 96% in the 1970's, Big Three market share sank to 57% in 2005
8 and is expected to decrease even further. This protracted decline has
9 struck at the region's hundreds of final assembly and supplier plants,
10 research and development facilities, and administrative offices. Additional
11 decline is virtually certain; more troubling is the possibility that the
12 downward slide will accelerate.

13

14 While the forecast incorporates assumptions about all three risk factors—
15 energy, housing, and automobiles—the possibility that any one, or even all,
16 could severely impair Southeast Michigan's economy in 2006, 2007 and
17 beyond remains significant and must be carefully weighed in all planning
18 decisions.

19

20 **Q. How was the Residential Class forecast developed?**

21 A. Detroit Edison's service area and bundled energy sales in the Residential
22 Class were forecast by an end-use method including 37 different appliances
23 or appliance groups. For each forecast year, three separate items were
24 forecast: (1) number of residential customers, (2) saturations of major

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1 appliances, and (3) average energy use per appliance of each type. For
2 each appliance, the product of these three forecast values yields the annual
3 energy sales. The total for all appliances is the total annual Residential
4 Class energy sales. This end-use approach incorporates projected
5 increases in energy efficiency of the various appliances into the total
6 Residential Class energy sales.

7

8 **Q. What is the outlook on Residential Class Sales?**

9 A. Service area Residential Class Sales will grow 1.0% annually, on average,
10 through 2015. This sales growth rate utilizes 2005 temperature-normalized
11 sales as the base year in its computation. This approach is used on all
12 class growth rate calculations in my testimony. The 1.0% annual growth
13 rate is due to housing starts averaging 18,400 units annually, which in turn,
14 increases the number of residential customers over 0.8% annually in the
15 forecast period. Use-per-customer growth is expected to increase by 0.2%
16 annually. This is due to the long-term trend in larger homes and the
17 tendency to furnish these homes with more, albeit more efficient, electrical
18 appliances, computers and entertainment equipment.

19

20 Based on historical behavior, Electric Choice is not expected to have a
21 significant effect on residential customers. Bundled Residential Class Sales
22 equals service area sales in the forecast.

23

24 **Q. How was the Commercial Class forecast developed?**

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1 A. Energy sales in the non-manufacturing sector of the Commercial Class were
2 forecast using regression models. Explanatory variables included county
3 level employment, real income per capita, population by age group and floor
4 stock.

5

6 Other non-manufacturing markets, such as agricultural supply, farming and
7 apartments, were forecasted with time trend models and were combined
8 with the previous regression models to obtain total non-manufacturing
9 sales.

10

11 Commercial Secondary and Primary rate class sales were obtained using
12 historical allocations on the total non-manufacturing sales.

13

14 Commercial manufacturing sales were forecasted using regression models
15 for six markets. These included chemicals and petroleum, metal fabrication,
16 primary metals, mining, automotive and miscellaneous manufacturing.
17 Explanatory variables included auto production, steel production, and
18 Federal Reserve Board (FRB) indices.

19

20 **Q. What is the outlook on Commercial Class Sales?**

21 A. Detroit Edison's service area Commercial Class Sales will grow 1.4%
22 annually, on average, through 2015. Service employment in this period will
23 be weak, growing at only 0.4% from 2005 to 2015.

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1 In addition, recent consolidations have reduced hospital sales. And low
2 population growth, in the under 24 years of age bracket, has slowed schools
3 and university growth.

4

5 Commercial manufacturing sales will grow 1.2% annually, on average, due
6 to the expected weakness in the auto sector and auto suppliers in our
7 service area.

8

9 Bundled Commercial Class Sales will increase 2.7% annually, on average,
10 through 2015. The decrease in Electric Choice sales in this class from
11 5,072 GWh in 2005 to 3,500 GWh in 2015 is a major contributor to the
12 bundled sales growth. The methodology used to forecast Electric Choice
13 sales, which is heavily dependent on the MCP projection, is described later in
14 my testimony.

15

16 **Q. How was the Industrial Class Sales forecast developed?**

17 A. For the development of the Industrial Class forecast, the automotive sector
18 was disaggregated into seven groups of automotive facilities (i.e., assembly
19 plants, stamping plants, powertrain/drivetrain plants, research and
20 administrative facilities, other parts plants and parts suppliers, foundries,
21 and other automotive plants). Energy sales for the groups identified above
22 were forecast using regression-based models with automotive production,
23 other economic indicators and time (a proxy for electrification) as
24 explanatory variables. Additional effects from announced plant closings or

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1 expansions, plant specific information and displacement generation were
2 also factored into these models. The non-automotive sector was
3 disaggregated into eleven markets and submarkets (i.e., chemicals,
4 petroleum, rubber and plastics, mining, non-metal processing, metal
5 fabrication, equipment manufacturing, stone/clay & glass, Big 3 rubber and
6 plastics, Big 3 equipment manufacturing and primary metals). Energy sales
7 for these markets were also forecast using regression-based models with
8 automotive production, Federal Reserve Board (FRB) indices and other
9 economic indicators.

10

11 **Q. What is the outlook for Industrial Class Sales?**

12 A. Detroit Edison's service area Industrial Class Sales will decline 0.2%
13 annually, on average. Industrial Class Sales is composed of three large
14 subclasses: automotive, primary metals (steel) and other manufacturing
15 sales. It is necessary to examine each subclass separately.

16

17 First, Detroit Edison's service area automotive sales will decrease 0.7%
18 annually, on average, through 2015. This decrease in the forecast period is
19 due to 1) declining market share for the Big 3 automakers, 2) plant closings
20 and the lack of major expansions in the Detroit Edison's service area and 3)
21 continued conservation in energy consumption.

22

23 Second, Detroit Edison's service area steel sales will increase 1.9%
24 annually, on average, through 2015. Sales growth in steel is stronger than

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1 automotive due to the increasing global demand for steel, an expected
2 upswing in non-residential construction, rebuilding in the Gulf states and the
3 steady, albeit slow demand from the local auto manufacturers.

4

5 Third, Detroit Edison's service area other manufacturing sales will remain at
6 current levels, through 2015. The lack of sales growth will be due to the
7 predominance of automotive suppliers in this subclass and their weak
8 outlook. Pressure to reduce costs will dampen growth in investments and
9 expansions. Higher energy costs will result in more conservation.

10

11 Detroit Edison's bundled Industrial Sales will increase from 12,249 GWh in
12 2005 to 12,971 GWh in 2015, due to the decrease in Electric Choice sales
13 in this forecast period. Electric Choice sales in the forecast period will
14 decline from 1,563 GWh in 2005 to 500 GWh in 2015. The methodology
15 used to forecast Electric Choice sales, which is heavily dependent on the
16 MCP projection, is described later in my testimony.

17

18 **Q. How was the Detroit Edison system peak demand forecast made?**

19 A. HELM was used to forecast annual Detroit Edison service area and bundled
20 peak demand. HELM was also utilized to determine monthly peak demands
21 in the forecast period.

22

23 **Q. Can you explain HELM?**

24 A. HELM aggregates hourly demand profiles from various sales or end-uses

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1 into a system annual loadshape. The annual sales and hourly demand
2 profiles for each sales category or end-use are the key inputs to this model.
3 HELM also provides monthly peak demands.

4

5 **Q. What temperature assumptions were made regarding the Detroit**
6 **Edison service area and bundled peak demand forecast?**

7 A. Normal temperature on the day of the annual peak is assumed to be 83.0°F,
8 the mean temperature from Detroit Metropolitan Airport. This value is
9 based upon an average peak-day mean temperature for a 30-year period
10 (1971 through 2000). The peak day is assumed to occur on a weekday in
11 July. Also normal temperature conditions were utilized for the projections of
12 weather-sensitive sales.

13

14 **Q. What is the compound annual growth rate of the Detroit Edison**
15 **service area system peak demand over the forecast period?**

16 A. Detroit Edison's service area system peak demand is forecast to increase
17 from 12,630 MW in 2005 to 13,735 MW in 2015, an average compound
18 annual growth rate of 0.8%. The 2005 demand is temperature-normalized.
19 The demand growth is due to a 1.0% growth in Residential Sales offset by a
20 decline in Industrial Class Sales.

21

22 **Q. What is the compound annual growth rate of the Detroit Edison**
23 **bundled peak demand over the forecast period?**

24 A. Detroit Edison's bundled peak demand is forecast to increase from 11,349

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1 MW in 2005 to 12,841 MW in 2015, an average compound annual growth
2 rate of 1.2%. The growth rate on bundled peak demand is greater than the
3 service area peak demand growth rate due to the decline in Electric Choice
4 sales as described earlier.

5

6 **Q. How was the Electric Choice sales forecast developed?**

7 A. The forecast of sales for Electric Choice was developed using a three step
8 process for the forecast period.

9

10 First, for 2006, customer notifications of their intention to return to Detroit
11 Edison's bundled service, received as of February 22, 2006, were examined.
12 The notifications provided a return date (i.e., month) when Electric Choice
13 customers expected to return to bundled service.

14

15 Based on this information a monthly profile of sales for 2006 was developed.
16 A 2006 year-end run rate of about 3,100 GWh of Electric Choice sales was
17 calculated. And from this, annual Electric Choice sales of 3,486 GWh were
18 forecasted.

19

20 Second, a headroom analysis was performed to determine the Electric
21 Choice sales for 2007 through 2009. The headroom analysis compared
22 bundled rates for Detroit Edison customers versus an estimated retail price
23 for Electric Choice customers. The headroom analysis determines a long-
24 term run rate of Electric Choice sales.

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2 Due to the fact that customers will not switch instantaneously because of
3 contractual obligations, customer/supplier inertia or other factors, the long-
4 term run rate Electric Choice sales would not occur for at least two years.
5 This is why the headroom analysis projects a long-term run rate of Electric
6 Choice sales and not current sales.

7

8 The Detroit Edison bundled rate considered the latest customer rates and
9 expected changes in the PSCR factor for 2007 and 2008. The Electric
10 Choice rate utilized a round-the-clock, (RTC), market clearing price (MCP) of
11 \$49/MWh for a two year forward, based on the price at the end of the
12 business day March 27, 2006. Also included were price adders for load
13 following, deadband, transmission and ancillary charges, MISO fees, reserve
14 requirements, transmission and distribution losses and a distribution charge.
15 In addition, a 10%, on average, customer savings threshold was assumed to
16 induce switching from Detroit Edison's bundled service to Electric Choice
17 service or vice versa. The model examined every commercial and industrial
18 customer in Detroit Edison's service area. Based on the comparison of rates
19 the model determined an expected long-term run rate of Electric Choice
20 sales. The model assumed rational customer behavior.

21

22 The 2008 long-term run rate of Electric Choice sales level was calculated as
23 4,000 GWh. Based on an interpolation from the 2006 year-end run rate of
24 3,100 GWh to the 2008 year-end run rate, annual Electric Choice sales were

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1 forecast for 2007, 2008 and 2009.

2

3 Third, for 2010 and beyond, the Electric Choice sales level of 4,000 GWh
4 was held constant. Since the headroom analysis described earlier is
5 dominated by the MCP assumption, (such as the \$49/MWh price used in this
6 headroom analysis), and since a longer term MCP market is not liquid and
7 possesses a large degree of uncertainty, the headroom analysis used for
8 earlier years would not yield meaningful results.

9

10 **Q. How are the Electric Choice peak demand effects calculated?**

11 A. Electric Choice sales projections are included in the HELM model as
12 additional sales categories. The peak demand effects are calculated by
13 HELM.

14

15 **Q. How do you develop confidence bands for the forecast?**

16 A. An EXCEL-based analysis is performed which captures: (1) the uncertainty
17 in the economic and demographic forecast model inputs, (2) the regression
18 and end-use model uncertainties, (3) loss factor uncertainty, (4) peak
19 demand/load factor uncertainty, which is driven by temperature uncertainty,
20 and (5) Electric Choice sales uncertainty.

21

22 The model develops a normal distribution for sales, net system output, and
23 peak demand. Standard deviations for these distributions are also
24 calculated from this model. The standard deviations are used to develop

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1 the 10% and 90% confidence bands shown on Exhibit DE-16, Schedule F1-
2 3. A 10% to 90% confidence band is equivalent to 1.28 standard deviations
3 around the mean.

4

5 **Q. What is the 90% confidence band for the 2007 Detroit Edison bundled**
6 **peak demand?**

7 A. Based on a standard deviation of 581 MW, the Detroit Edison bundled peak
8 demand in the year 2007, using the 90% confidence band, would be 12,714
9 MW.

10

11 **Q. Does this complete your testimony, Mr. Colandrea**

12 A. Yes, it does.

13