

# **DTE Energy<sup>®</sup>**



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*Detroit Edison*

## **Fermi 3 Combined License Application**

### **Part 1: General and Administrative Information**

Revision 2  
March 2010

## **PART 1: GENERAL AND ADMINISTRATIVE INFORMATION**

### **1. Introduction**

Pursuant to Sections 103 and 185(b) of the Atomic Energy Act, and 10 CFR 52, Subpart C, The Detroit Edison Company (Detroit Edison) hereby applies to the U.S. Nuclear Regulatory Commission (NRC) for a Combined License (COL) to construct and operate an ESBWR at the Fermi Nuclear Power Plant site (Fermi). Detroit Edison also applies for such other licenses as would be required to possess and use source, special nuclear and by-product material in connection with the operation of the ESBWR. The ESBWR will be designated and hereinafter referred to as Fermi 3.

The Fermi site is located in Monroe County, Michigan, approximately 30 miles southwest of Detroit. There are two existing nuclear reactors at Fermi. Fermi 1 is a non-operational demonstration liquid metal fast breeder reactor that is currently undergoing decommissioning. Fermi 2 is an operating boiling water reactor. Fermi 3 will be located adjacent to and generally to the south of Fermi 2 and west of the Fermi 1.

Detroit Edison is the sole owner of the existing Fermi 1 and 2 nuclear units. Detroit Edison is the licensed operator of the existing facilities, with control of the Fermi site and existing facilities. Detroit Edison will own, construct, and operate Fermi 3.

The ESBWR is a 4,500 MWt reactor that uses natural circulation for normal operation and has passive safety features. General Electric Company (GE, now GE-Hitachi Nuclear Energy Americas, LLC (GEH)) submitted an application for final design approval and standard design certification for the ESBWR on August 24, 2005, which the NRC is currently reviewing under docket number 52-010. It is anticipated that the design certification of the ESBWR will be issued in June 2010. This COL application references and incorporates the Design Control Document (DCD) currently under review in the design certification proceeding.

## **2. Information Required by 10 CFR 50.33**

### **2(a)-(d) Corporate Information**

NRC regulations at 10 CFR 50.33(a)–(d) require that an application contain certain corporate information about the applicants. Information about the Detroit Edison is provided below.

#### **Corporate Information for the Detroit Edison Company (Detroit Edison)**

<b>Name of Applicant</b>	Detroit Edison
<b>Address</b>	One Energy Plaza Detroit, MI 48226-1279
<b>State of Incorporation</b>	Michigan
<b>Principal Business Location</b>	One Energy Plaza Detroit, MI 48226-1279

### **Description of Business**

Detroit Edison's operations include the power generation and electric distribution facilities that service approximately 2.2 million residential, commercial, industrial and wholesale customers throughout southeastern Michigan. As of December 31, 2007, Detroit Edison owns and operates 11,020 MW of generating capacity across a mix of fossil, nuclear and hydroelectric pumped storage power plants. As of December 31, 2007, Detroit Edison owns and operates 678 distribution substations with a capacity of approximately 33,376,000 kilovolt-amperes (kVA) and approximately 427,100 line transformers with a capacity of approximately 26,280,000 kVA.

Detroit Edison's business is subject to the regulatory jurisdiction of various agencies, including, but not limited to, the Michigan Public Service Commission (MPSC), the FERC and the NRC. The MPSC issues orders pertaining to rates, recovery of certain costs, including the costs of generating facilities and regulatory assets, conditions of service, accounting and operating-related matters. Detroit Edison's MPSC-approved rates charged to customers have historically been designed to allow for the recovery of costs, plus an authorized rate of return on our investments. The FERC regulates Detroit Edison with respect to financing authorization and wholesale electric activities. The NRC has regulatory jurisdiction over all phases of the operation, construction, licensing and decommissioning of Detroit Edison's nuclear plant operations. Detroit Edison is subject to the requirements of other regulatory agencies with respect to safety, the environment and health.

**Names, addresses, and citizenship of DTE Energy directors and principal officers**

<b>Name</b>	<b>Title</b>	<b>Address</b>	<b>Citizenship</b>
Tony Earley	Chairman and CEO	One Energy Plaza, Detroit, MI 48226-1279	USA
Steve Kurmas	President and COO	One Energy Plaza, Detroit, MI 48226-1279	USA
Dave Meador	Director, Executive Vice President and CFO	One Energy Plaza, Detroit, MI 48226-1279	USA
Jack Davis	Senior Vice President and Chief Nuclear Officer	One Energy Plaza, Detroit, MI 48226-1279	USA
Bruce Peterson	Director, Senior Vice President and General Counsel	One Energy Plaza, Detroit, MI 48226-1279	USA
Joyce Hayes- Giles	Senior Vice President	Once Energy Plaza, Detroit, MI 48226-1279	USA
Paul Fessler	Vice President, Fossil Generation	One Energy Plaza, Detroit, MI 48226-1279	USA
Skiles Boyd	Vice President	One Energy Plaza, Detroit, MI 48226-1279	USA
Dan Brudzynski	Vice President	One Energy Plaza, Detroit, MI 48226-1279	USA
Vince Dow	Vice President	One Energy Plaza, Detroit, MI 48226-1279	USA
Trevor Lauer	Vice President	One Energy Plaza, Detroit, MI 48226-1279	USA
JoAnn Chavez	Vice President and Chief Tax Officer	One Energy Plaza, Detroit, MI 48226-1279	USA
Peter Oleksiak	Vice President and Controller	One Energy Plaza, Detroit, MI 48226-1279	USA
Nick Khouri	Vice President and Treasurer	One Energy Plaza, Detroit, MI 48226-1279	USA
Sandy Ennis	Director and Corporate Secretary	One Energy Plaza, Detroit, MI 48226-1279	USA

### **No Foreign Ownership, Control, or Influence**

Detroit Edison is not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.

### **Agents and Representatives**

Detroit Edison is submitting this application on its own behalf. Otherwise, Detroit Edison is not acting as agent or representative of any other person in filing this application.

### **(e) Class of License, Use of Facility, Period of Time for which the License is Sought, and Other Licenses Issued or Applied for in Connection with the Proposed Facility**

This application seeks a class 103 license for Fermi 3, which will be used to generate electricity for commercial purposes. Pursuant to 10 CFR § 52.104, Detroit Edison requests a combined license with a term of 40 years, commencing from the date that the Commission makes the finding that the acceptance criteria in the license are met under § 52.103(g) or allowing operation during an interim period under 52.103(c).

Pursuant to 10 CFR § 52.8, this application also seeks licenses, which would be incorporated into the COL, to receive, possess and use source, special nuclear, and by-product material, in connection with the operation of Fermi 3. Specifically, as the proposed operator of Fermi 3, Detroit Edison seeks authority:

- 1) to receive, possess, and use, at any time, special nuclear material as reactor fuel;
- 2) to receive, possess, and use, at any time, any by-product, source, and special nuclear material, as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- 3) to receive, possess, and use, in amounts as required, any by-product, source, or special nuclear material, without restriction to chemical or physical form, for sample analysis or instrument and equipment calibration, or associated with radioactive apparatus or components; and,
- 4) to possess, but not separate, such by-product, and special nuclear material, as may be produced by the operation of the facility.

## **(f) Financial Qualifications**

### **(f)(1) Construction Funds**

Founded in 1903 Detroit Edison is the largest electric utility in Michigan and one of the largest investor-electric utilities in the United States. Detroit Edison delivers power to approximately 2.2 million homes and businesses in southeastern Michigan and owns and operates 11,020 megawatts of generating capacity and had operating revenues of \$4,900 million for the year ended December 31, 2007. Detroit Edison's mortgage bond ratings are A- from Standard and Poor's and A3 from Moody's with senior unsecured ratings of BBB- from Standard and Poor's. Detroit Edison is a wholly owned subsidiary of DTE Energy Company (NYSE: DTE), a Fortune 500 diversified utility company with approximately \$23 billion in assets and operating revenue of approximately \$8,500 million through the year ended December 31, 2007.

### **Estimate of Construction Costs**

For purposes of demonstrating financial qualifications, a conservative ESBWR construction cost estimate is provided below. This estimate is based on a number of studies that have been conducted by governmental agencies, universities and other entities and includes a significant contingency to account for uncertainty.

The construction cost estimate is expressed in terms of "overnight capital cost," which is a term commonly used in describing the cost of large capital projects. This overnight capital cost includes the engineering, procurement and construction costs for the ESBWR plant, owner's costs, and contingencies, but excludes interest and escalation during the construction. Owner's costs include site work and preparation, cooling water intake structures and cooling towers, import duties on components, insurance, spare parts, transmission interconnection, development costs, project management costs, owner's engineering, state and local permitting, legal fees, and staffing-related training.

In 2003, the Massachusetts Institute of Technology published an interdisciplinary study entitled, *The Future of Nuclear Power*.<sup>1</sup> The MIT report provided a base-case estimate of \$2,000/kWe (in 2002 dollars) for the overnight capital cost of new nuclear units. This estimate is based in part on two completed Advanced Boiling Water Reactors (ABWRs) at the Kashiwazaki-Kariwa Nuclear (KKN) Power Station, with reported construction costs of \$1,800 to \$2,000/kWe.<sup>2</sup> While a specific estimate for an ESBWR is not provided, the MIT report indicates that the ESBWR is a simplified design the overnight cost of which would be lower than an ABWR.<sup>3</sup>

In 2004, the U.S. Department of Energy's Energy Information Agency examined nuclear power plant costs as part of its 2004 Annual Energy Outlook (AEO).<sup>4</sup> The 2004 AEO based its estimate on two Generation III light-water reactors in operation (presumably the two KKN ABWRs) and another four under construction in Asia. It used as its starting point the \$2,083 per

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<sup>1</sup> Massachusetts Institute of Technology (MIT), "The Future of Nuclear Power, An Interdisciplinary MIT Study," 2003. ([web.mit.edu/nuclearpower/pdf/nuclearpower-full.pdf](http://web.mit.edu/nuclearpower/pdf/nuclearpower-full.pdf)).

<sup>2</sup> *Id.*, App. 5 at 141-142.

<sup>3</sup> *Id.* at 138.

<sup>4</sup> Energy Information Administration (EIA), "Annual Energy Outlook 2004," DOE/EIA-0383(2004). ([www.econstats.com/EIA/AEO2004.pdf](http://www.econstats.com/EIA/AEO2004.pdf)).

kWe realized cost (inclusive of all contingencies) for the two completed reactors. It then projected that the realized cost, inclusive of contingencies, for the sixth unit would be \$1,928 per kWe when completed.

In 2005, the Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development provided an update on Projected Costs of Generating Electricity.<sup>5</sup> The NEA report examined a reference set of thirteen plants and reported overnight construction costs generally ranging between \$1,000 to \$2,000 per kWe, with one unit at \$2,100 per kWe and another at \$2,500 per kWe.

In 2007, the Keystone Center published a report entitled Nuclear Power Joint Fact-Finding.<sup>6</sup> The Keystone Center examined the overnight cost of eight recently completed reactors, with overnight costs ranging from \$1,790/kWe to \$2,818/kWe in 2002 dollars. The average overnight cost for these plants was \$2,150/kWe in 2002 dollars, which the Keystone Report escalated to \$2,950/kWe in 2007 using a 3.3 percent real escalation rate. The Keystone report then considered several scenarios of interest and escalation over a construction period to develop the following range of final construction costs:

- \$3,600/kWe (0% real escalation, 5-year construction period)
- \$4,000/kWe (3.3% real escalation, 6-year construction period).
- \$4,200/kWe (3.3% real escalation, 7-year construction period).

Based on the studies described above, for purposes of demonstrating financial qualifications, a reasonable estimate of the overnight cost of a new nuclear unit is approximately \$3,500/kWe in 2008 dollars. For conservatism, a further contingency is added as discussed below.

There are uncertainties in estimating the cost of building a new nuclear unit. First, many studies rely on recent nuclear construction projects outside the United States. Therefore, the Fermi 3 cost contingency considers the potential shortage of skilled construction labor in the United States.<sup>7</sup> Second, the Fermi 3 cost contingency considers the cost escalation that could result from the increasing global demand for commodities.

Given these considerations Detroit Edison has added a contingency of over 30 percent (\$1,000/kWe) to the \$3,500/kWe overnight cost estimate for a new nuclear unit such as Fermi 3 for purposes of conservatively demonstrating financial qualifications. A breakdown of the construction costs under these assumptions is provided below:

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<sup>5</sup> Nuclear Energy Agency, Organization for Economic Co-operation and Development (OECD), and International Energy Agency, "Projected Costs of Generating Electricity," 2005 Update. ([www.oecdbookshop.org](http://www.oecdbookshop.org)).

<sup>6</sup> The Keystone Center, Nuclear Power Joint Fact-Finding (June 2007). ([www.keystone.org/spp/documents/FinalReport\\_NJFF6\\_12\\_2007\(1\).pdf](http://www.keystone.org/spp/documents/FinalReport_NJFF6_12_2007(1).pdf)).

<sup>7</sup> As indicated in the Keystone Report, when overnight costs are escalated to determine costs incurred over the construction period, an added year of construction would add on the order of \$200/kW to the realized construction costs. See Keystone Report at note 34.

### Overnight Construction Cost

Power Block (Nuclear Island and Turbine Island)	\$2,500 to 3,000/kWe
Owners' Cost (Balance of Plant, Circulating Water Cooling System, Site Preparation, Transmission, and Contingency)	\$1,000 to 1,500/kWe
Nuclear fuel inventory cost for first core	\$306 million
Total estimated cost	\$3,500 to 4,500/kWe

### Detroit Edison Source of Construction Funds

Detroit Edison plans to finance the cost to construct Fermi 3 through a combination of debt and equity. The relative amount of debt and equity may depend on the availability of federal loan guarantees under the provisions of the Energy Policy Act of 2005. If loan guarantees are available on satisfactory terms, Detroit Edison may limit its required equity to 20 percent of project cost by issuing federally guaranteed debt for the remaining 80 percent. If these loan guarantees are not available on satisfactory terms, an equity contribution of up to 50 percent could be required to maintain investment grade ratings for the debt. In either case, Detroit Edison has sufficient capacity from a combination of internal and external funds for the equity and debt. The traditional capital markets will serve as the sources for the financing.

Detroit Edison expects to be able to recover in rates those costs associated with the construction of Fermi 3, including interest costs. Legislation enacted by the State of Michigan in November 2008 (2008 Public Act No.286) includes provisions for interest cost recovery during construction and establishes a certificate of need process that will establish, prior to beginning plant construction, how construction costs would be recovered as well as the projected amount.

### Financial Statements

DTE Energy files its financial statement with the Securities and Exchange Commission (SEC). (<http://phx.corporate-ir.net/phoenix.zhtml?c=68233&p=irol-sec>).

DTE Energy's annual financial statement (SEC Form 10-K for the year ended December 31, 2007) is provided as Attachment A hereto, and DTE Energy's quarterly financial statement SEC Form 10-Q for the quarterly period ended June 30, 2008 is provided as Attachment B.

These financial statements confirm the financial strength of DTE Energy, when coupled with the financial stability associated with a regulated electric utility, reasonably assure the funding required to construct Fermi 3.



**(f)(2) Operating Funds**

Detroit Edison is an electric utility as defined in 10 CFR 50.2. Detroit Edison generates and distributes electricity and recovers the cost of this electricity through cost-of-service based rates established by the MPSC.

**(g) Radiological Emergency Response Plans**

Information on the state and local radiological emergency response plans required by 10 CFR 50.33(g) is provided in Chapter 13 of the Final Safety Analysis Report.

**(h) [Not applicable to an application for a combined license]**

**(i) Listing of Regulatory Agencies Having Jurisdiction and News Publications**

Detroit Edison's business is subject to the regulatory jurisdiction of various agencies, including, but not limited to, the MPSC, the FERC and the NRC. The MPSC issues orders pertaining to rates, recovery of certain costs, including the costs of generating facilities and regulatory assets, conditions of service, accounting and operating-related matters. Detroit Edison's MPSC-approved rates charged to customers have historically been designed to allow for the recovery of costs, plus an authorized rate of return on our investments. The FERC regulates Detroit Edison with respect to financing authorization and wholesale electric activities. The NRC has regulatory jurisdiction over all phases of the operation, construction, licensing and decommissioning of Detroit Edison's nuclear plant operations. Detroit Edison is subject to the requirements of other regulatory agencies with respect to safety, the environment and health.

The Honorable Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E., Room 1A  
Washington, DC 20426

Ms. Mary Jo Kunkle  
Executive Secretary  
Michigan Public Service Commission  
6545 Mercantile Way  
Lansing, MI. 48909

The area news publications and their associated addresses are provided below.

WCHB-AM  
3250 Franklin Street  
Detroit, MI 48207

WXYZ-TV Channel 7  
20777 West 10 Mile Road  
Southfield, MI 48075

WWJ-AM Radio  
26495 American Drive  
Southfield, MI 48034

WJR-AM Radio  
3011 West Grand Blvd.  
Detroit, MI 48202

WJBK-TV Channel 2  
16550 West 9 Mile Road  
Southfield, MI 48075

WDIV-TV Channel 4  
550 West Lafayette Blvd.  
Detroit, MI 48226

Detroit News  
615 West Lafayette  
Detroit, MI 48226

Detroit Free Press  
600 West Fort Street  
Detroit, MI 48226

Heritage Newspapers  
1 Heritage Drive Ste. 100  
Southgate, MI 48195

WSPD-AM Radio  
125 South Superior Street  
Toledo, OH 43602

WUPW-TV  
4 Sea Gate  
Toledo, OH 43604

WNWO-TV Channel 24  
300 South Bryne Road  
Toledo, OH 43615

WTVG-TV Channel 13  
4247 Dorr Street  
Toledo, OH 43607

WTOL-TV Channel 11  
730 N. Summit  
Toledo, OH 43604

The Blade  
PO Box 921  
Toledo, OH 43697

The Milan News-Leader  
106 West Michigan Avenue  
Saline, MI 48176

Bedford Now  
9031 Lewis Avenue  
Temperance, MI 48182

WTWR Radio Tower 98  
14930 LaPlaisance, Suite 113  
Monroe, MI 48161

The Dundee Independent  
PO Box 98  
Dundee, MI 48131

The Monroe Evening News  
PO Box 1176  
Monroe, MI 48161

#### **(j) Restricted Data Agreement**

This application does not contain restricted data or other national defense information, nor is it expected that subsequent amendments to the license application will contain such information. However, pursuant to 10 CFR 54.17(g) and 10 CFR 50.37, Detroit Edison, as a part of the application for a combined construction and operation license, hereby agree that they will not permit any individual to have access to or any facility to possess restricted data or classified national security information until the individual and/or facility has been approved for such access under the provisions of 10 CFR Parts 25 and/or 95.