

**BEFORE THE PUBLIC SERVICE COMMISSION
OF MARYLAND**

**IN THE MATTER OF THE APPLICATION OF
CP CRANE, LLC FOR A CERTIFICATE OF
PUBLIC CONVENIENCE AND NECESSITY
AUTHORIZING THE MODIFICATION OF THE
CHARLES P. CRANE GENERATING STATION IN
BALTIMORE COUNTY, MARYLAND**

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Case No. _____

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DIRECT TESTIMONY OF DAVID R. DUNBAR

ON BEHALF OF

CP CRANE, LLC

May 31, 2018

1 Direct Testimony of David R. Dunbar

2 INTRODUCTION AND PURPOSE OF TESTIMONY

3 **Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?**

4 A. My name is David R. Dunbar. My business address is 200 West Madison Street, Suite
5 3810, Chicago, IL 60606.

6 **Q. WHAT IS YOUR CURRENT EMPLOYER AND POSITION?**

7 A. I am Vice President – Operations & Development for CP Crane, LLC (“CP Crane”), a
8 wholly owned subsidiary of Middle River Power, LLC.

9 **Q. WHAT ARE YOUR RESPONSIBILITIES ASSOCIATED WITH THE PROJECT?**

10 A. I am responsible for overall project development, including obtaining necessary permits
11 and approvals.

12 **Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL**
13 **BACKGROUND AND EXPERIENCE.**

14 A. I graduated from Clarkson University, Potsdam, NY in 1974 with a BS in Mechanical
15 Engineering. I graduated from Georgia State University with a Masters of Business
16 Administration in 1999. I have been in the power generation industry for 44 years, first as
17 an engineer, then a project developer and then as an executive. I have been involved in the
18 development of coal, natural gas, waste-to-energy and biomass fired generating plants. I
19 have worked for Babcock & Wilcox boiler company, Clark Kenith, a waste-to-energy
20 construction company and Mirant Corporation, the former independent power subsidiary
21 of Southern Company. I started with Middle River Power in December 2016.

22 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

23 A. No.

1 **Q. PLEASE STATE THE PURPOSE OF YOUR TESTIMONY IN THIS**
2 **PROCEEDING.**

3 A. The purpose of my testimony is to introduce the activities that are the subject of this
4 Application for a Certificate of Public Convenience and Necessity (“CPCN”) to modify
5 the Charles P. Crane Generating Station (“Crane Station”) by retiring its existing coal-fired
6 units and adding combustion turbines (“CTs”) fired primarily with natural gas (the
7 “Repowering Project” or the “Project”). I will provide an overview of the purpose of the
8 Project and of its associated impacts.

9 My testimony will also introduce the Direct Testimony of Jeffrey L. Meling of
10 Environmental Consulting & Technology, Inc. (“ECT”), who is sponsoring the
11 Environmental Review Document attached to and incorporated into the Application, as
12 well as the Direct Testimony of Thomas Pritcher of ECT who will discuss the Air Quality
13 aspects of the Project.

14 **OVERVIEW OF THE PROJECT**

15 **Q. WHAT PROJECT IS THE SUBJECT OF THE APPLICATION?**

16 A. CP Crane is proposing to modify, or repower, Crane Station. The main electrical
17 generating units at Crane Station are two coal-fired units: Unit 1, nominally rated at 190
18 MW and began operating in 1961; and Unit 2, nominally rated at 209 MW and began
19 operating in 1963. There is also an existing 14 MW General Electric (“GE”) Frame 5 CT,
20 which is a No. 2 distillate-fired generating unit. The Repowering Project involves retiring
21 the two coal-fired units and adding three GE LM6000 CTs. The GE LM6000 CTs will be
22 configured for simple-cycle operation and fired primarily with natural gas, which will be

backed up by ultra-low-sulfur diesel (“ULSD”). Once the Repowering Project is complete, the GE Frame 5 CT will also return to operation.

Q. WHAT IS THE PURPOSE OF THE REPOWERING PROJECT?

A. The purpose of the Repowering Project is to provide clean, quick start, dependable and efficient generating capacity, and energy and ancillary services at the Crane Station location. The Repowering Project will re-purpose existing electrical and natural gas interconnections and other infrastructure at the site to provide electricity and related services energy during short times of peak load or system outages. To provide dependable energy in the event that natural gas is not available, which typically occurs during periods of extremely cold weather, and in support of PJM’s Capacity Performance requirements, the Repowering Project will also have the ability to produce electricity using ULSD and will store enough ULSD on site to operate the Repowering Project at full load continuously for up to 72 hours.

Q. PLEASE PROVIDE AN OVERVIEW OF THE PROJECT.

A. The planned Repowering Project will involve the design, construction, and operation of:

- Three natural gas- and ULSD-fired aero-derivative CTs;
- Liquid ULSD fuel handling, piping, and storage;
- A natural gas compression station with associated treatment, piping, and regulation equipment;
- Water treatment and wastewater handling facilities;
- Electrical interconnection facilities;
- Ancillary equipment.

The electric generation units and associated equipment will be constructed on a portion of the existing Crane Station site. The Project will result in the continued retirement of the

1 two existing coal-fired generating units and the installation of three aero-derivative type
2 GE LM6000 CTs and associated ancillary equipment. Each of the CTs will have a nominal
3 generating capacity of 48 MW and the Project's total nominal generating capacity will be
4 approximately 146 MW. Thus, upon completion of the Project, Crane Station's total
5 nominal generating capacity at International Organization for Standardization ("ISO")
6 conditions will be 160 MW including the existing GE Frame 5 CT, relative to the
7 approximately 400-MW capacity of the existing coal-fired units. The CTs are expected to
8 serve as peaking units and operate at an annual capacity factor of up to 30 percent. The
9 design of the LM6000 CTs will allow them to start up and reach full load in 10 minutes or
10 less and shut down quickly multiple times per day if circumstances warrant. The proposed
11 LM6000 CTs will fire natural gas as their primary fuel and will also be capable of firing
12 ULSD fuel oil in situations when natural gas is not available in sufficient quantities.

13 Other Project components will include new natural gas compression facilities;
14 liquid ULSD fuel delivery, handling, and storage facilities; process water supply storage,
15 pumping, and treatment facilities; black start generator; continuous emissions monitoring;
16 and wastewater collection and handling facilities. The electricity generated by the
17 proposed LM6000 CTs and the existing Frame 5 CT will be transmitted to the power grid
18 via a new 115-kilovolt (kV) substation. The new substation will connect to the two existing
19 BG&E 115 kV electrical transmission circuits present at Crane Station substation and will
20 allow for the use of either transmission circuit for improved reliability.

21 **Q. PLEASE PROVIDE AN OVERVIEW OF THE PROJECT SITE.**

22 A. The Crane Station site is in eastern Baltimore County. Crane Station occupies
23 approximately 157 acres on the end of a small peninsula into the Gunpowder River and

1 Chesapeake Bay. Saltpeter Creek lies to the north, while Seneca Creek is to the south.
2 Carroll Island, most of which is associated with Aberdeen Proving Ground, lies directly to
3 the east and connects to the peninsula by Carroll Island Road and a bridge. Seneca Park
4 Beach and Bowleys Quarters are the nearest neighborhoods or communities to the site.
5 Seneca Park Beach, immediately west of the plant, has waterfront homes and a boat yard.
6 The Bowleys Quarters neighborhood is located approximately 1 mile west.

7 The topography of the plant property is flat, with elevations several feet above sea
8 level. As indicated previously, the main generating units at the plant are the two coal-fired
9 units that are planned to be retired. There is also a small (14 MW) No. 2 distillate-fired
10 CT generating unit (which will continue operations upon completion of the Project) and
11 two small auxiliary boilers (which will no longer be used upon completion of the Project).
12 Other prominent features of the plant include railcar facilities, a coal storage pile, and coal
13 handling equipment.

14 **Q. PLEASE EXPLAIN THE ADVANTAGES OF THE PLANNED PROJECT SITE.**

15 A. CP Crane's development plans for the Project have been designed to take full advantage,
16 both environmentally and economically, of the Project site's location, existing
17 infrastructure, and proximity to key support facilities.

18 First, the CTs will be located inside the boundaries of an existing power plant, one
19 that has been in active use since 1961. The specific area within the existing power plant
20 property has been previously impacted and is currently the location of parking area and
21 infrastructure, which will be removed, repurposed, or relocated onsite.

22 Second, given the proposed LM6000 CTs will be located at a currently active power
23 plant, the Project will be able to utilize some of the existing fuel- and water supply-related

1 facilities, as well as in-plant auxiliaries. Natural gas will be the CTs' primary fuel. A
2 natural gas pipeline already delivers gas to the site and has sufficient capacity to supply the
3 proposed LM6000 CTs operating at full load. The facility will utilize the existing onsite
4 city water supplies. A new water treatment facility will be installed to meet the Project's
5 process water needs. Wastewater from the Project, at significantly lower volumes than the
6 current power plant, will discharge to the existing plant wastewater system, which will be
7 repurposed in supporting the discharge of the newly installed equipment and balance of
8 plant systems. The proposed LM6000 CT installations will also connect to and make use
9 of the current plant emergency fire water system, where required.

10 Third, the proposed LM6000 CTs will take full advantage of the existing units'
11 interconnection to the electrical transmission system. Only two short 115-kV generation
12 leads (one for each transmission circuit) will be needed to make the Project's
13 interconnection to the existing electrical transmission system. The interconnection's
14 structures and lines will be located entirely on the Crane property. The Project will require
15 no new offsite transmission lines or structures.

16 **Q. PLEASE DESCRIBE THE CONSTRUCTION SCHEDULE AND PLAN.**

17 A. Construction of the Project will commence immediately after the necessary licenses and
18 permits are obtained and engineering is advanced to a sufficient level. We hope to have
19 all necessary licenses and permits by December of 2018. Construction of the Project will
20 require approximately 10 to 12 months. Under this schedule, the Project would reach
21 commercial operation in December 2019. Project construction activities will include:

- 22 • Site mobilization.

- Demolition/relocation of existing buildings in the area of the proposed CTs and supportive systems.
- Site preparation and excavation.
- Forming, installation of rebar, and pouring of concrete foundations.
- Installation of underground utilities and routings.
- Site backfill and compaction.
- Mechanical and electrical equipment installation.
- Steel erection.
- Piping, electrical wiring, and controls installation.
- Final site grading and cleanup.
- Equipment commissioning, startup, and testing.

Q. PLEASE DESCRIBE THE EXPECTED CONSTRUCTION TRAFFIC.

A. It is conservatively assumed that nearly all construction workers will travel to work using their personal vehicles with an average loading of 1.2 persons per vehicle. During peak times, up to 75 workers will arrive, resulting in approximately 63 vehicles arriving at the site each morning and departing at the end of the day. Shift hours by skillset may be staggered if needed to reduce peak congestion. Over the last several years, CP Crane has had a workforce of 50-60 employees, so the average number of workers traveling to the site for Project construction should result in traffic flow similar to that which exists currently at the site.

Construction employees will remain onsite during the day and will most likely bring their own lunches. As such, break activities during the day by onsite employees

1 should not generate significant traffic. A small number of supervisory personnel are
2 expected to arrive and depart the site each day.

3 Delivery of materials and equipment will occur via truck to the Crane site.
4 Construction traffic will be directed to adhere to a specific route designed for minimal area
5 congestion, safety, and efficiency.

6 **OVERVIEW OF IMPACTS ASSOCIATED WITH THE PROJECT**

7 **Q. WHAT IMPACTS WILL THE PROJECT HAVE ON ELECTRIC SYSTEM** 8 **STABILITY AND RELIABILITY?**

9 A. The Repowering Project will provide replacement electric generating capacity and voltage
10 control at the same injection point that the CP Crane coal plant served for many
11 years. Although the total capacity of the Repowering Project will be less than the original
12 coal plant, the Repowering Project generating units will provide PJM with additional
13 generating flexibility including faster startups and faster load changing capacity. A
14 statement of my educational background and professional qualifications is attached to my
15 direct testimony at Exhibit DRD-1.

16 **Q. HOW WOULD YOU CHARACTERIZE THE ENVIRONMENTAL IMPACTS** 17 **ASSOCIATED WITH THE PROJECT?**

18 A. As noted previously, the proposed Repowering Project involves permanently shutting
19 down the two existing coal-fired units and replacing them with CTs fueled primarily with
20 natural gas. This modification to Crane Station will significantly reduce emissions of air
21 pollutants from the power plant. In addition, while construction and operation of the
22 proposed generating units will have some other associated environmental impacts, these
23 impacts can be characterized as minimal and do not trigger any federal permit

1 requirements. Therefore, given: (a) the Repowering Project's location at and within an
2 existing power plant site, (b) the reductions in emissions of air pollutants that will result
3 from implementing the modifications, and (c) the minimal potential to negatively impact
4 most environmental resource areas initially as a result of the nature of the Project and its
5 layout and design, the Project will have an overall positive environmental impact.
6 Environmental impacts are evaluated and discussed in the Environmental Review
7 Document and in the Direct Testimony of Jeffrey L. Meling, while specific Air Quality
8 impacts are discussed further in the Direct Testimony of Thomas Pritcher.

9 **Q. WHAT WILL BE THE SOCIOECONOMIC IMPACTS OF THE PROJECT?**

10 A. Project construction is anticipated to require approximately 10 to 12 months to complete.
11 Based on this schedule and typical contractor construction sequencing for this type of
12 facility, the average annual construction labor force is expected to be approximately 60
13 employees, with an estimated 75 employees at the peak of construction. Most of the
14 construction labor is expected to be drawn from within the Baltimore metropolitan area.
15 An estimated total of more than \$6.5 million will be spent on construction labor.

16 The Project is also expected to have a positive impact on local businesses and the
17 local economy during construction. Local businesses will benefit by servicing the needs
18 of CP Crane and its contractors during construction. Purchases of services and supplies
19 such as fuel oil, concrete, aggregate, lumber, conduit, cable, building supplies, office
20 supplies, and tools are likely to be made locally, whenever available. After construction,
21 Project operation is expected to purchase approximately \$400,000 to \$500,000 in annual
22 goods and services, many of which could be sourced from local suppliers. Local eating
23 and drinking establishments and retail businesses will also benefit.

1 **Q. WILL THERE BE ANY BENEFICIAL TAX REVENUES TO MARYLAND**
2 **AND/OR BALTIMORE COUNTY?**

3 A. Project construction will generate significant tax revenues for the state from various
4 sources, including income taxes, retail sales tax on materials, supplies and selected
5 construction services, retail sales tax on expenditures by workers, and corporate income
6 taxes paid by local contractors working on the Project.

7 Local government tax revenues during construction will primarily accrue from
8 personal income taxes, property taxes, and permitting and impact fees. Although there is
9 no local sales tax, state sales tax collections for general revenue are returned to the local
10 level through intergovernmental transfers, grants, etc.

11 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

12 A. Yes.

Exhibit DRD-1

2016-Present: Middle River Power, LLC – VP-Operations & Development

- Responsible for operations of 1,800MW of generations plants plus development of new generation projects and support for acquisitions.

2013-2016: Atlantic Power Corp. – General Manager

- 2015-2016, General Manager US East: Overall management responsibilities for 5 power plants that AP owns and operates in eastern US, plus 3 plants where AP is a partner. Two biomass, four natural gas CCGT, one coal and one hydro plant totaling 600 equity MW. Responsible for Ebitda of \$60m. Also lead acquisition efforts in biomass platform for AP.
- 2013-2015 Director, Asset Management: Asset management responsibilities for Cadillac Renewable Energy: 39MW biomass in MI, Piedmont Green Power: 55MW biomass in GA, Chambers Cogeneration 262MW coal fired cogen project in NJ and Orlando Co-gen, a 129MW cogeneration project in FL.

2012-2013: Rollcast Energy, Inc – VP Asset Management

- Asset management responsibilities for Cadillac Renewable Energy 39MW biomass fueled facility in Cadillac, MI and Piedmont Green Power 55MW biomass fueled facility in Barnesville, GA

2007-2012: Dunbar Consulting, LLC

- Development of two new NG-CCGT generation projects in Texas.
- Performed due diligence for Greenleaf Power on several biomass acquisition targets.
- For Madison Dearborn Partners performed detailed due diligence and technical/operations input to bidding model. Provided detailed performance, fixed and variable O&M costs, LTSA/PA major maintenance costs and periodic capital expense project costs. Midland Cogeneration Venture, BG North East Assets, Navasota Holdings and PSEG, TX
- As a consultant to Optim Energy, LLC (a joint venture of Public Service of New Mexico and Cascade Investments, LLC) led technical negotiations with NRG Energy for a Joint Ownership Agreement, EPC Contract and Purchase and Sale Agreements and LTSA which resulted in the successful financial closing of a 550MW combined cycle plant in Texas.
- Provided consulting services to Mirant Corporation's Caribbean group to assist the divestiture of Mirant's Caribbean assets.

1990-2006: Mirant Corporation (became GenOn purchased by NRG)

- 2004-2006 President and CEO: Grand Bahama Power Company : Overall responsibility for this vertically integrated power company with 19,000 customers, 150 installed megawatts and 180 employees. Dunbar led the company's activities through 3 major hurricanes, generation expansion and labor negotiations. Dunbar initiated the Power Quality Improvement Program to improve reliability, oversaw permitting, financing and construction of a new 18MW reciprocating engine-based power plant and was instrumental in securing \$50M of long-term financing.
- 2001-2003 VP Operations and Development/ Mirant Americas Caribbean: Managed Mirant's portfolio of utility and IPP assets in the Caribbean. Led teams responsible for acquisitions of Jamaica Public Service Company, Aqualectra and Curacao Utility Company. Responsible for inserting Mirant's Asset Management plan at acquired assets.
- 1995 – 2001: Director Mirant Consulting Services: Turned business unit from \$2m loss to \$1m profit in one year and to \$23m profit in 5 years. Sold specialized utility services to utilities in Caribbean, Europe and Asia.
- 1992 – 1995: Manager, Business Development: Responsible for finding, selecting, and developing business opportunities in the independent power and cogeneration sector, both in the U.S. and Europe.
- 1990 – 1992 Project Engineering Manager: Responsible for managing in-house and contracted engineering activities in support of independent power and cogeneration projects.

1986 – 1990: Clark Kenith, Inc, a waste-to-energy construction company, Dunbar held the position of special projects director and as engineering manager, directing all engineering for operating and proposed resource recovery facilities.

1984 – 1986: Hercules, Inc. - Project manager responsible for the design, procurement, and turnkey construction of biomass dryers for the pulp and paper and cogeneration power industries.

1978 – 1984: Babcock & Wilcox - Project manager responsible for keeping as-sold profits on \$20 million of package boiler sales per year. Helped turn the business from a \$2 million loss to a half-a-million-dollar gain in two years.

1974 – 1978: Lapp Insulator Company - Product design engineer for high voltage (up to 765kV) line and station insulators.

Dunbar is a registered Professional Engineer in Georgia.

BS, Mechanical Engineering; Clarkson University 1974 / MBA; Georgia State University 1999