

MONTANA-DAKOTA UTILITIES CO.

Before the Public Service Commission of North Dakota

Case No. PU-22-\_\_\_\_

Direct Testimony

of

Joseph E. Geiger

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

2 A. My name is Joseph E. Geiger and my business address is 400  
3 North Fourth Street, Bismarck, North Dakota 58501.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am the Director of Generation in the power production department  
6 of Montana-Dakota Utilities Co. ("Montana-Dakota").

7 **Q. Please describe your duties and responsibilities with Montana-**  
8 **Dakota.**

9 A. I have overall responsibility for the day-to-day operation of  
10 Montana-Dakota's electric generation facilities, represent Montana-  
11 Dakota's interests in joint owned generation facilities operated by other  
12 companies, and I am also responsible for new generation development.

13 **Q. Please outline your educational and professional background.**

14 A. I hold a Bachelor's Degree in Electrical Engineering from the  
15 University of North Dakota. My work experience includes six years of

1 experience as a plant engineer, nine years of experience in varying roles  
2 of plant supervision/management, and three years of generation  
3 development and operational responsibilities in my current position which  
4 includes coal-fired, gas-fired, and renewable generation.

5 **Q. What is the purpose of your testimony in this proceeding?**

6 A. The purpose of my testimony is to describe and provide cost  
7 estimate schedules for a variety of projects. These projects include:  
8 • The Heskett IV combustion turbine project (“Heskett IV Project”);  
9 • The Water Pipeline Construction for Heskett III and Heskett IV;  
10 • The shop modification for Heskett III and Heskett IV (“Heskett Shop  
11 Modification Project”); and  
12 • The office building addition at Lewis & Clark II (“Lewis & Clark  
13 Office Addition Project”)

14 **Q. Please describe Montana-Dakota’s Heskett IV Project.**

15 A. The Project includes a natural gas-fired, 88 MW, simple cycle  
16 combustion turbine (“SCCT”) and the associated facilities to interconnect  
17 with Montana-Dakota’s existing electric system (“Interconnect”). The  
18 Heskett IV Project is located near Mandan, North Dakota adjacent to  
19 Montana-Dakota’s R.M. Heskett Station III. Natural gas fuel will be  
20 supplied through an existing 10-inch pipeline (“NG Pipeline”),

1 approximately 24 miles in length, interconnecting with the Northern Border  
2 Pipeline Company near St. Anthony, North Dakota, which also provides  
3 natural gas fuel to R.M. Heskett Station III. Operating and fire  
4 suppression water needs will be supplied through a 12-inch pipeline  
5 (“Water Pipeline”), approximately 2,684-feet in length, interconnecting with  
6 the City of Mandan water supply. A new administration building will be  
7 built in conjunction with the Heskett IV Project. The Heskett IV Project will  
8 be operated and maintained by a staff of six employees.

9 **Q. Has the North Dakota Public Service Commission Granted an**  
10 **Advance Determination of Prudence (ADP) for the Heskett IV**  
11 **project?**

12 A. On August 28, 2019, Montana-Dakota filed an application for an  
13 ADP for Heskett IV in Case No. PU-19-306 and for a certificate of public  
14 convenience and necessity (PCN) in Case No. PU-19-307 to construct,  
15 own, and operate Heskett IV. On August 5, 2020. The North Dakota  
16 Public Service Commission approved the ADP and PCN incorporating the  
17 Modified Settlement Agreement between Commission Staff and Montana-  
18 Dakota which was filed on July 23, 2020.

19 **Q. What is a simple cycle combustion turbine?**

20 A. A SCCT is generally built to start up quickly to serve peak capacity

1 needs. In the SCCT, air is drawn in at the front of the unit and is  
2 compressed using rows of rotating blades. The compressed air is then  
3 sent to a combustion chamber where it is mixed with fuel and the mixture  
4 is ignited. The hot combustion gas is then expanded through rotating  
5 turbine blades delivering power through a shaft connected to the  
6 generator where electricity is produced.

7 **Q. Please describe the major equipment chosen for Montana-Dakota's**  
8 **Heskett IV Project.**

9 A. The equipment includes a General Electric 7E.03 ("7EA") heavy  
10 duty ("Frame") combustion turbine which is natural gas-fired, has a dry low  
11 NOx combustion system, evaporative inlet air cooling for power  
12 augmentation, a totally enclosed water-to-air cooled ("TEWAC") generator,  
13 and a closed cooling water system for cooling the generator heat  
14 exchangers, turbine supports, flame detectors, and lubrication oil. Other  
15 auxiliary equipment includes natural gas heating and filtration, fire  
16 detection and suppression, turbine control system, starting means,  
17 exhaust system, a continuous emissions monitoring system, an  
18 emergency backup generator, a high-voltage substation, transformers,  
19 power load center, and distribution equipment. The Heskett IV Project will  
20 share use of R.M. Heskett Station III's turbine water wash system, balance

1 of plant control system, instrument air system, and service building, as  
2 well as the natural gas pipeline and water pipeline. The Frame  
3 Combustion Turbine was selected due to it being an ideal size to replace  
4 the Heskett coal units under MISO's generator interconnection  
5 replacement process as well as its lower capital cost, lower operation and  
6 maintenance cost, better emissions control, ability to perform on-site  
7 maintenance, lower natural gas inlet pressure requirement, less  
8 susceptibility to cold weather operational issues, and Montana-Dakota's  
9 operating experience associated with Frame SCCTs.

10 **Q. Please describe the schedule for the Combustion Turbine**  
11 **construction.**

12 A. The general works construction ("GWC") contract was awarded on  
13 March 28, 2022, with site activities commencing on mid-May 2022. The  
14 civil/structural portion of the GWC activities include site preparation,  
15 foundations, concrete flat work, and above ground structures. The  
16 mechanical portion of the GWC activities include heavy haul and setting  
17 the turbine and generator, receiving and handling all other equipment and  
18 materials, and erection of mechanical equipment and piping (including tie-  
19 ins to existing R.M. Heskett Station III systems). The electrical portion of  
20 the GWC activities include the installation of electrical equipment,

1 enclosures, fixtures, and panels; as well as grounding, duct bank, cable  
2 tray, conduit, cabling, and wiring of all equipment. GWC substantial  
3 completion is expected by January 31, 2023. Commissioning and start-up  
4 activities will follow GWC substantial completion and are expected to take  
5 approximately three months.

6 **Q. Please describe the schedule for the Water Pipeline construction.**

7 A. Due to the retirement of Heskett Units I & II and the associated  
8 water intake structure, a replacement water supply source is needed to  
9 provide water for fire protection and evaporative cooling of the Heskett III  
10 & IV combustion turbines. Montana-Dakota has worked with consultants  
11 and the City of Mandan to develop a plan that will bring water from the  
12 City of Mandan's water treatment facility to the combustion turbine site.  
13 The Company analyzed a number of options for fire protection and  
14 evaporative cooling water sources, including the existing water intake  
15 structure, and the Water Pipeline Project was the most economic choice  
16 for future water needs. The project involves installing approximately 2,684  
17 feet of 12-inch pipe that is designed to provide approximately 1,395  
18 gallons per minute of fresh water to the Heskett Station. The project  
19 requires a Certificate of Corridor Compatibility ("Certificate") and  
20 Transmission Facility Route Permit from the North Dakota Public Service

1 Commission (“Commission”). On January 14, 2022, Montana-Dakota filed  
2 the Certificate with the Commission. A public hearing was held on April 5,  
3 2022, at the Mandan City Hall. The Certificate of Corridor Compatibility  
4 was provided to Montana-Dakota on May 4, 2022. Construction of the  
5 project will commence in mid-May 2022, and is expected to take  
6 approximately three months to complete.

7 **Q. Please provide the current breakdown of the Heskett IV Project and**  
8 **Water Pipeline capital cost estimates.**

9 A. The Heskett IV Project capital cost, allocated to the North Dakota  
10 Electric jurisdiction, is \$46,469,597 as shown on Statement B, Schedule  
11 B-1, page 11. The Water Pipeline cost, allocated to the North Dakota  
12 Electric Jurisdiction, is shown as FP-320773 on Statement B, Schedule B-  
13 1, page 3 and is estimated at \$1,633,207.

14 **Q. What is the anticipated schedule for commercial operation of the**  
15 **Heskett IV Project?**

16 A. The Heskett IV Project is anticipated to be ready for commercial  
17 operation by April 2023.

18 **Q. Please describe the Heskett Shop Modification Project.**

19 A. The Heskett Shop Modification Project will provide a fabrication  
20 shop for plant employees to utilize in their maintenance and operation

1 duties at Heskett III and Heskett IV through the modification of an existing  
2 cold storage building. The Heskett Shop Modification Project will also  
3 provide storage for tooling, materials, and parts needed to perform  
4 maintenance on Heskett III and Heskett IV through use of the existing cold  
5 storage building. The Heskett Shop Modification Project will replace  
6 heated storage and a fabrication shop that will be demolished due to  
7 Heskett I and Heskett II coal facility retirement and subsequent demolition.  
8 The existing fabrication shop has structural ties to the Heskett I and  
9 Heskett II coal facilities, therefore will not be able to be repurposed after  
10 plant demolition.

11 **Q. Please provide the current breakdown of the Heskett Shop**  
12 **Modification Project capital cost estimates.**

13 A. The Heskett Shop Modification Project capital cost estimate, as  
14 allocated to the North Dakota Electric Jurisdiction, is \$355,571 and is  
15 shown as FP-318880 on Statement B, Schedule B-1, page 3.

16 **Q. Please describe the Lewis & Clark Office Addition Project.**

17 A. The Lewis & Clark Office Addition Project will provide a  
18 replacement for the recently demolished office at Lewis and Clark I. The  
19 office at Lewis and Clark I was integrated structurally to the Lewis and  
20 Clark I coal facility, therefore could not be repurposed after plant

1 demolition. The Lewis & Clark Office Addition Project will provide a  
2 sanitary system, filing space, server space, HVAC, offices for Lewis &  
3 Clark II support staff, a conference room, and a designated lunch room.

4 **Q. Please provide the current breakdown of the Lewis & Clark Office**  
5 **Addition Project capital cost estimates.**

6 A. The Lewis & Clark Office Addition Project capital cost, as allocated  
7 to the North Dakota Electric Jurisdiction, is \$1,288,773, as shown on  
8 Statement B, Schedule B-1, page 2 as FP-318827.

9 **Q. Does this conclude your direct testimony?**

10 A. Yes, it does.