**EXHIBIT NO. \_\_\_(MBM-6)
DOCKETS UE‑151871/UG-151872
PSE EQUIPMENT LEASING SERVICE
WITNESS:  MALCOLM B. MCCULLOCH**

**BEFORE THE**

**WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

|  |  |  |
| --- | --- | --- |
| **WASHINGTON UTILITIES AND****TRANSPORTATION COMMISSION,****Complainant,** **v.****PUGET SOUND ENERGY,****Respondent.** |  | **Dockets UE-151871** **UG-151872** |

**FIFTH EXHIBIT TO THE PREFILED DIRECT TESTIMONY OF**

**MALCOLM B. MCCULLOCH**

**ON BEHALF OF PUGET SOUND ENERGY**

**February 25, 2016**

**Figure 1 – Residential Gas Furnace Installation Specification**

| **Cost Component** | **What should be included in flat rates?** |
| --- | --- |
| **Site Check** | 1. Preform heat loss & Manual J calculations
2. Take material measurement
3. Verify installation will meet code (venting, combustion air, gas pipe, clearances, etc.)
4. Draft work order for installation
5. Schedule installation date
6. Secure customer signature on PSE form(s)
 |
| **Permit Handling** | 1. Handling fee for obtaining standard permit (mechanical) and associated labor and inspection time – where applicable
 |
| **Standard Installation** | 1. Conduct duct blaster
2. Shut off power
3. Shut off gas line and disconnect
4. Disconnect 115 v and 24 V wiring
5. Remove and dispose of old furnace
6. Design and build transitions
7. Cut sheet metal to transition points
8. Install furnace
9. Install new sheet metal, filter channel and standard filtration system
10. Seal internal and external joints
11. Install and/or reconnect venting
12. Hook up, inspect and test fuel line
13. Hook up 115v wiring from J-box to furnace
14. Install fan switch or connect to t-stat
15. Hook up internal 24 v controls and t-stat
16. Fire off unit, check combustion and firing rate
	1. Check combustion of water heater if common venting used)
17. Set fan speed, check all controls, run through heating cycle
18. Check all safety operations
19. Clean site
20. Review T-stat settings with customer to optimize their goals/system performance
21. Discuss installation and operation with homeowner
 |

**Figure 2 – Residential Gas Furnace Installation Exclusions**

|  |  |
| --- | --- |
| **Cost Component** | **What should be included in flat rates, or considered as supplemental?** |
| **Standard Installation** | 1. Crawl space or attic installation
2. Relocation of furnace
3. Relocating gas line
4. Relocating venting over
5. Additional supply or return runs
6. Increasing duct size
7. Code upgrades

 o Adding combustion air o B vent o PVC/Condensate/ Condensate pump o Increasing gas line size per code  o Securing gas line to code 1. Extending gas lines for additional appliances
2. Priming and painting gas line
3. T-stat relocation or rewiring installs
4. Installing new or smart t-stat
5. Advanced air filtration system
6. Controls add-ons (temperature/humidity sensor)
7. Cutting sheetrock
8. Relighting other appliances if fuel line removed past G valve
9. Whole house duct sealing
10. Air conditioning
 |