



HURRICANE CITY UTAH

Mayor
Clark Fawcett

City Manager
Kaden C. DeMille

Power Board
Mac J. Hall, Chair
Dave Imlay, Vice Chair
Colt Stratton
Kerry Prince
Mark Maag
Angie Erickson

Power Board Meeting Agenda

7/8/2026

3:00 PM

Power Department Meeting Room – 526 W 600 N

Notice is hereby given that the Power Board will hold a Regular Meeting in the Power Department Meeting room located at 526 W 600 N, Hurricane, UT. A silent roll call will be taken, along with the Pledge of Allegiance and prayer by invitation.

AGENDA

1. Pledge of Allegiance
2. Prayer
3. Approval of minutes from June 2026

STAFF REPORTS

Mike Johns/Power Director
Brian Anderson/Transmission & Distribution Superintendent
Mike Ramirez/Service Superintendent
Jared Ross/Substation & Generation Foreman

OLD BUSINESS

1. Discussion and possible recommendation to the City Council regarding updates to **Underground Standards and Specifications** – Alex Farnsworth

NEW BUSINESS

1. Discussion and possible recommendation to the City Council regarding updates to **Pole Attachment Standards** – Alex Farnsworth, Brian Anderson
2. UAMPS Updates
3. **Closed Meeting pursuant to Utah Code Section 52-4-205, upon request**

ADJOURNMENT

The above notice was posted to the Hurricane City website, the Utah State Public Notice Website, and at the following locations:

1. Hurricane City Office – 147 North 870 West, Hurricane, UT
2. US Post Office – 1075 West 100 North, Hurricane, UT
3. Washington County Library (Hurricane Branch) – 36 South 300 West, Hurricane, UT

REASONABLE ACCOMMODATION: Hurricane City will make efforts to provide reasonable accommodations to disabled members of the public in accessing City programs, please contact the Executive Assistant, 435-635-5536, at least 24 hours in advance if you have special needs.





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The Hurricane City Power Board met on June 10, 2026, at 3:00 p.m. at the Clifton Wilson Substation located at 526 W 600 N.

In attendance were Mac Hall, Dave Imlay (by phone), Colt Stratton, Angie Erickson, Mike Johns, Brian Anderson, Mike Ramirez, Alex Farnsworth, Dayton Hall, Mike Vercimak, Weston Walker, Fred Resch, Bruce Zimmerman, and Crystal Wright.

Mac Hall welcomed everyone to the meeting. Fred Resch led the Pledge of Allegiance and Dayton Hall offered the prayer. Dave Imlay motioned to approve the minutes from April 2026. Colt Stratton seconded the motion. Motion passed unanimously.

Mike Johns: Mike Johns provided some information regarding some requested budget items for this upcoming fiscal year. There are some larger capital items with some infrastructure needs that are coming as well as a warehouse building that is needed. He provided some information regarding the Power Cost Adjustment (PCA) and rate changes that go into effect this upcoming billing that comes out on July 1st. We will be including a flier and newsletter article information regarding the PCA to assist with community information. He showed a graph of the United States that was in an APPA magazine article showing public power average rates across the country. Utah ranks third to the lowest average rates across the country compared to all public power providers.

Brian Anderson: Brian Anderson stated the crew has mostly been working along 1100 West. They completed the Rock Hollow line move yesterday. For Capacity 2.0 we were waiting for two custom poles that have finally arrived, and we had some issues getting some of the holes dug because of the lava. We had to install culverts and cement the poles into the culverts once the holes were dug. That has been completed and all the poles are now installed. There are a few other small things, but once this section wire is pulled and the line is energized the Capacity 2.0 project will be complete. We're hoping to be close to complete before the end of this budget year, but it may run into July.

Mike Ramirez: Mike Ramirez updated the board regarding the extreme busyness we are experiencing. Our crews have been inundated with multiple projects overlapping. We have ordered some custom poles for the 600 North Phase 3B/3C project. This is the project that we received approval for the Grid Reliance Grant. There are some long lead times for materials for this project so we're starting to get some of that material ordered. We are waiting for AT&T to build our private IP addresses for the modems for cellular connection needed for the AMI infrastructure.

Jared Ross: Mike Johns reported for Jared Ross in his absence. He reported the generators have finished pre-run inspections and are ready for the upcoming generator run season. He described an oil sample issue that happened with a sample that they think was swapped between a regulator sample and an oil sample. When we submitted a secondary oil sample to verify, everything came out normal. He provided an update regarding the Anticline SCADA work that was completed with the assistance of CLP Engineering. The SCADA work for this substation is completed, and we will be updating a different substation each year to bring them all current as well as train Brent George as they are updated. He provided an update on the Sky Mountain Substation block wall completion.



Discussion and possible recommendation to the City Council regarding Underground Standards and Specifications:

Alex Farnsworth presented this item. Colt Stratton stated that there were some issues he found. Dave Imlay stated he also found a few things. It was determined to schedule a meeting to get together to discuss those specifics next week. Alex Farnsworth reviewed some of the specific things that were detailed differences and not just strikethroughs or corrections. These included a requirement for 3-phase power to be brought to the lot for any commercial or industrial lot, load loss calculations updated to match what is being charged, location specifications for electrical equipment installed, consolidated primary installation requirements, a new transformer sizing table, a new commercial conductor quantity and sizing table, adjusted secondary distance requirements, and a specification for residential lots to only have one meter. Colt Stratton motioned to continue this item until the next Power Board meeting, pending a meeting to review potential changes needed. Angie Erickson seconded the motion. Motion passed unanimously.

UAMPS Updates: There were no updates reported.

Meeting adjourned at 4:09 p.m. The next Power Board meeting is scheduled for July 8, 2026, at 3:00 p.m.

BUDGET

AVERAGE YEARLY POWER PRICES

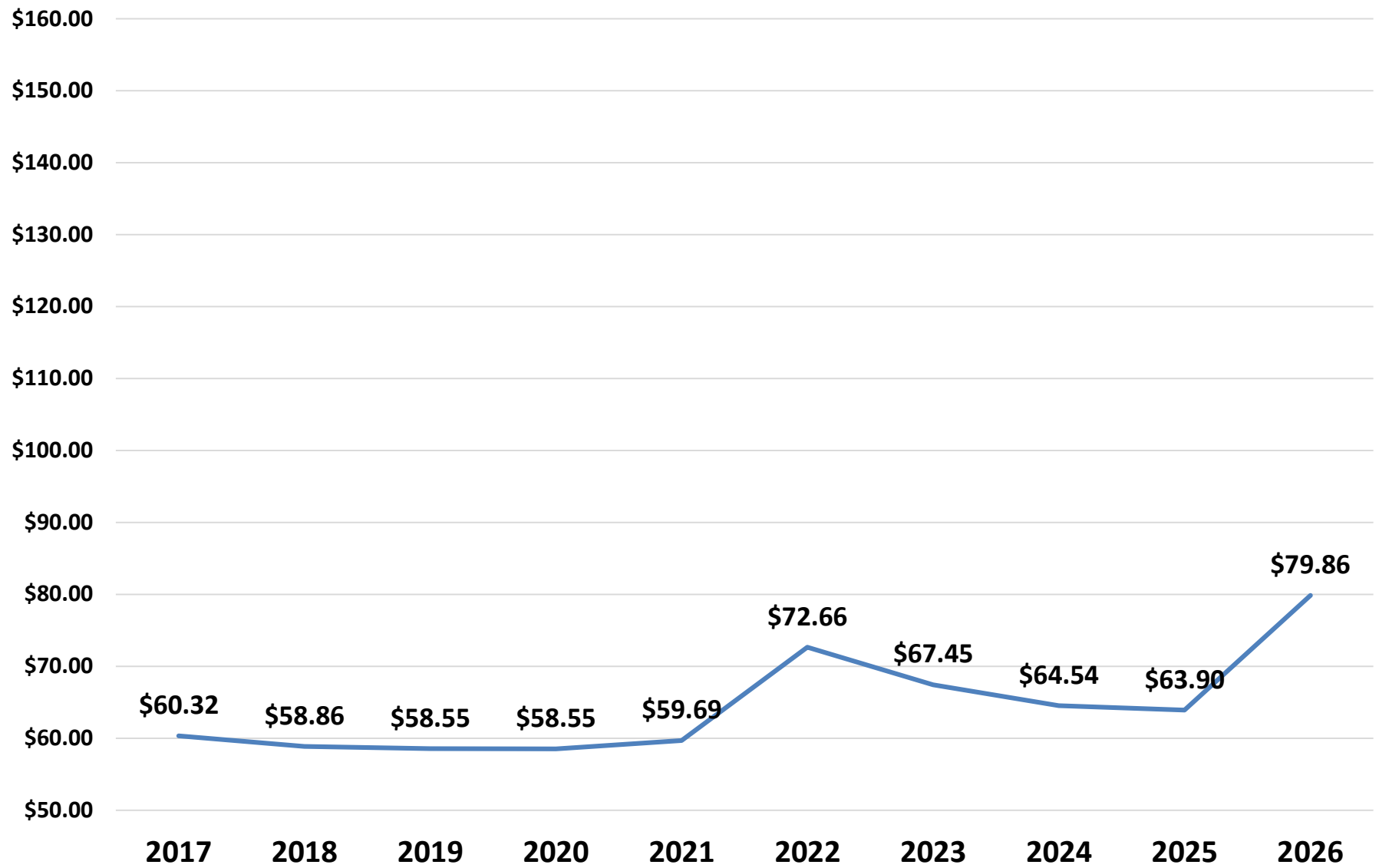
25-26 bdgt amount (thru Apr 2026) **\$72.89**
 BDGT Year to Date **\$73.41**

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<i>Jan</i>	\$59.07	\$60.62	\$59.75	\$57.76	\$60.14	\$68.25	\$132.44	\$80.85	\$73.20	\$75.88
<i>Feb</i>	\$63.04	\$60.96	\$67.00	\$60.67	\$63.19	\$70.88	\$83.72	\$71.23	\$74.69	\$76.52
<i>Mar</i>	\$60.99	\$60.09	\$65.17	\$64.67	\$63.64	\$67.28	\$87.92	\$70.62	\$77.45	\$72.86
<i>Apr</i>	\$59.49	\$55.02	\$55.44	\$55.92	\$61.86	\$82.63	\$75.32	\$70.32	\$76.44	\$68.93
<i>May</i>	\$60.32	\$58.86	\$58.55	\$58.55	\$59.69	\$72.66	\$67.45	\$64.54	\$63.90	\$79.86
<i>June</i>	\$58.54	\$52.17	\$55.30	\$53.44	\$86.91	\$77.60	\$69.52	\$63.88	\$63.66	
<i>Jul</i>	\$58.29	\$67.87	\$54.29	\$55.98	\$81.04	\$85.31	\$90.48	\$70.51	\$71.49	
<i>Aug</i>	\$59.00	\$66.55	\$54.58	\$78.40	\$72.03	\$96.60	\$84.39	\$67.05	\$65.48	
<i>Sep</i>	\$62.36	\$55.00	\$54.34	\$64.93	\$82.38	\$127.29	\$83.74	\$66.46	\$74.68	
<i>Oct</i>	\$59.79	\$59.36	\$59.70	\$62.82	\$75.92	\$83.45	\$83.77	\$75.82	\$71.95	
<i>Nov</i>	\$62.14	\$64.60	\$63.80	\$63.60	\$70.47	\$96.34	\$73.03	\$85.85	\$81.66	
<i>Dec</i>	\$58.80	\$61.61	\$58.55	\$60.33	\$70.07	\$161.27	\$71.99	\$68.50	\$75.69	
<i>Yr Avg</i>	\$60.15	\$60.23	\$58.87	\$61.42	\$70.61	\$90.80	\$83.65	\$71.30	\$72.52	\$74.81
<i>Weighted Avg</i>	\$59.90	\$60.56	\$58.11	\$61.98	\$72.46	\$92.09	\$84.16	\$70.50	\$71.50	\$75.05

**Cy to
Date**

These figures capture the total cost of power to the power department. The power department uses costs only associated with the purchasing and generation of power and includes debt payments and interest associated with power resources.

May

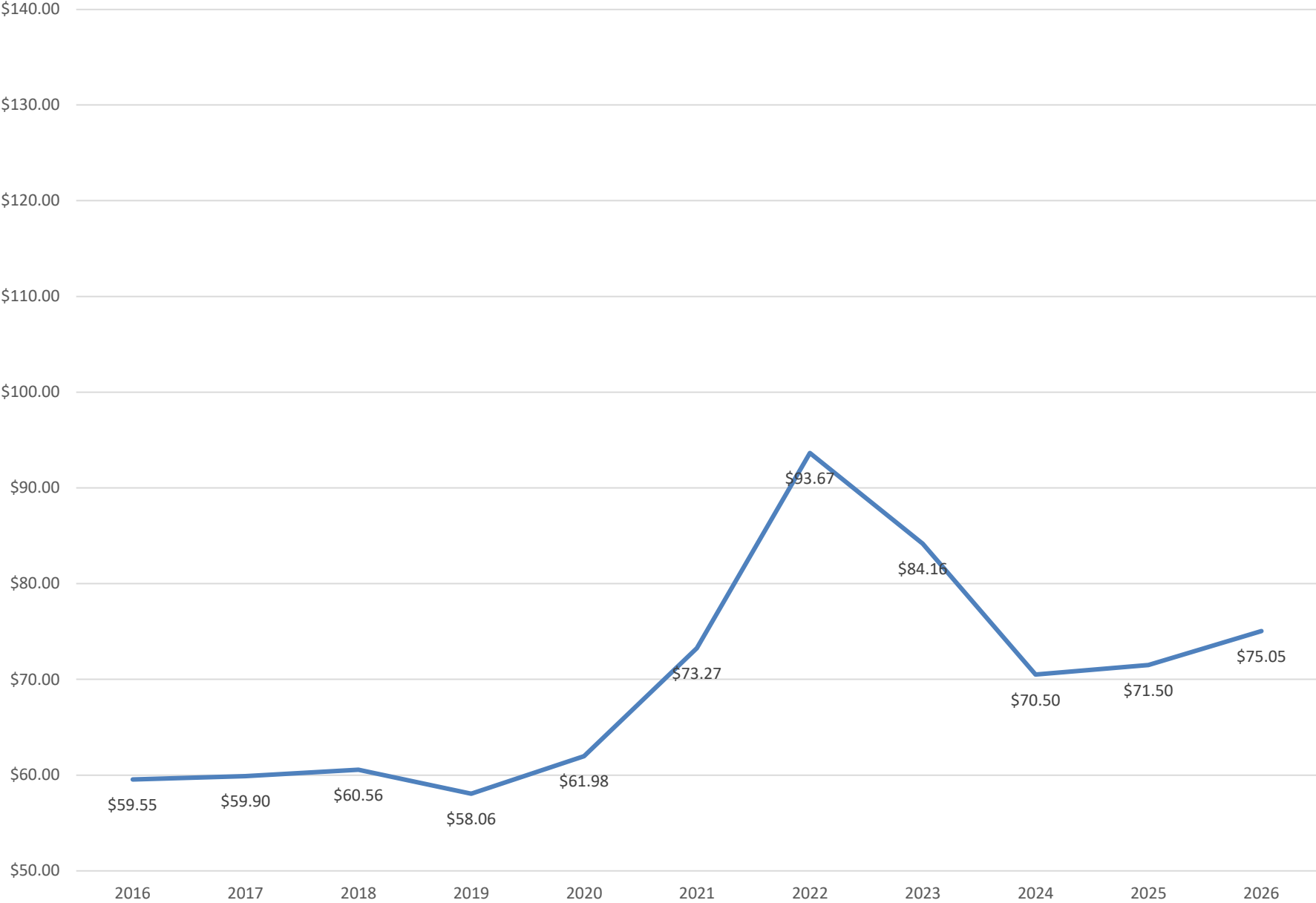


PCA

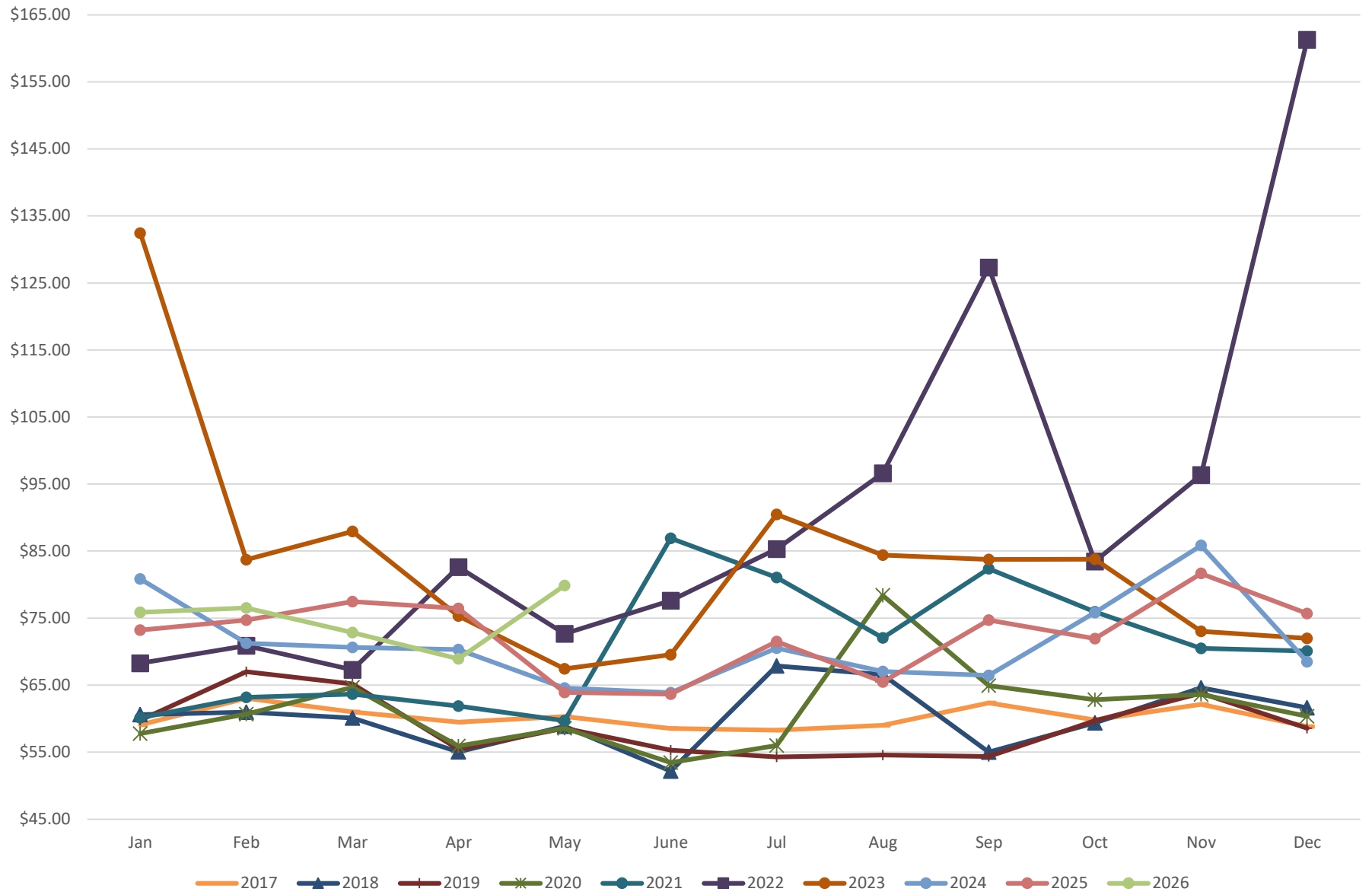
(Based on 12-mo rolling average)



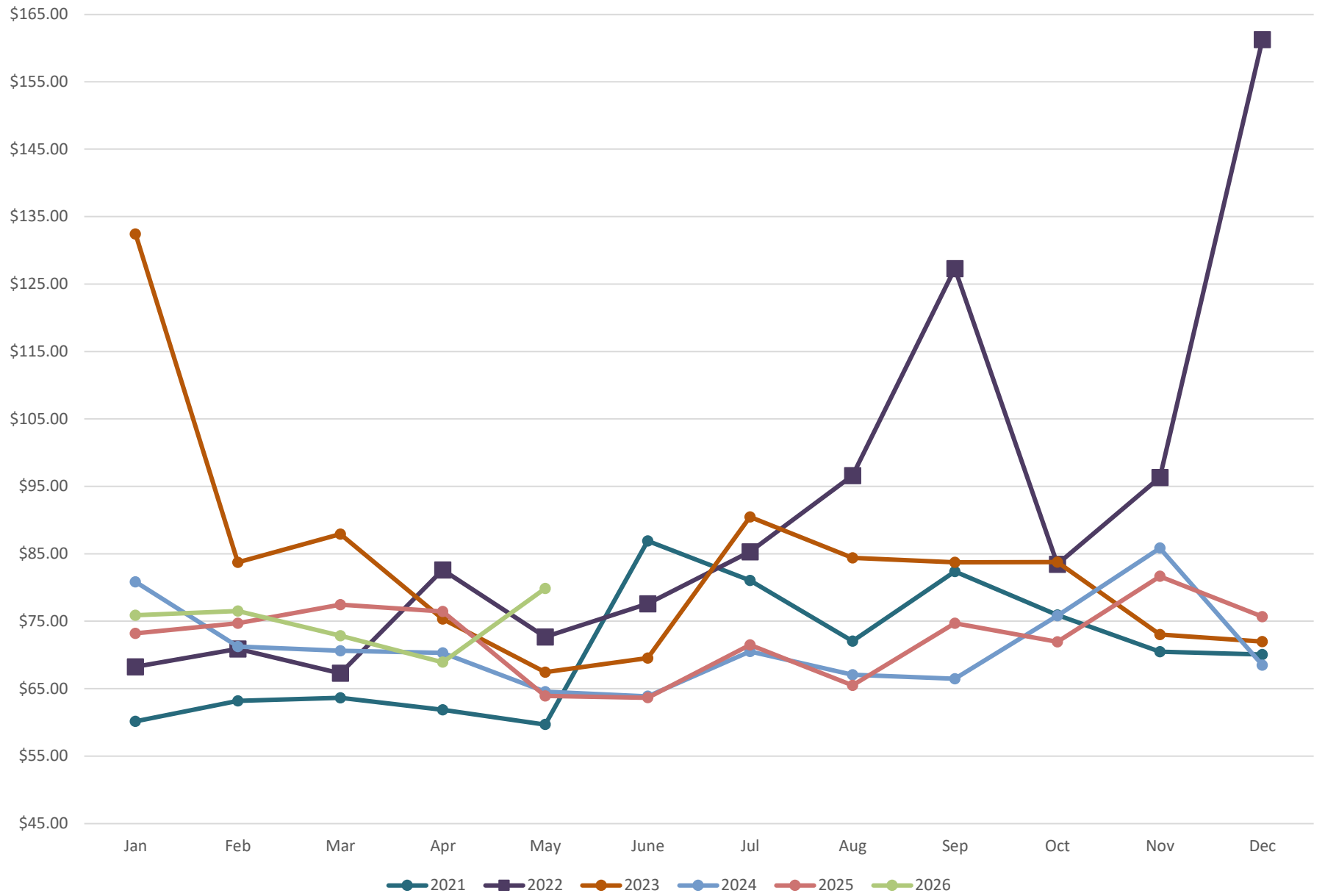
Weighted Average



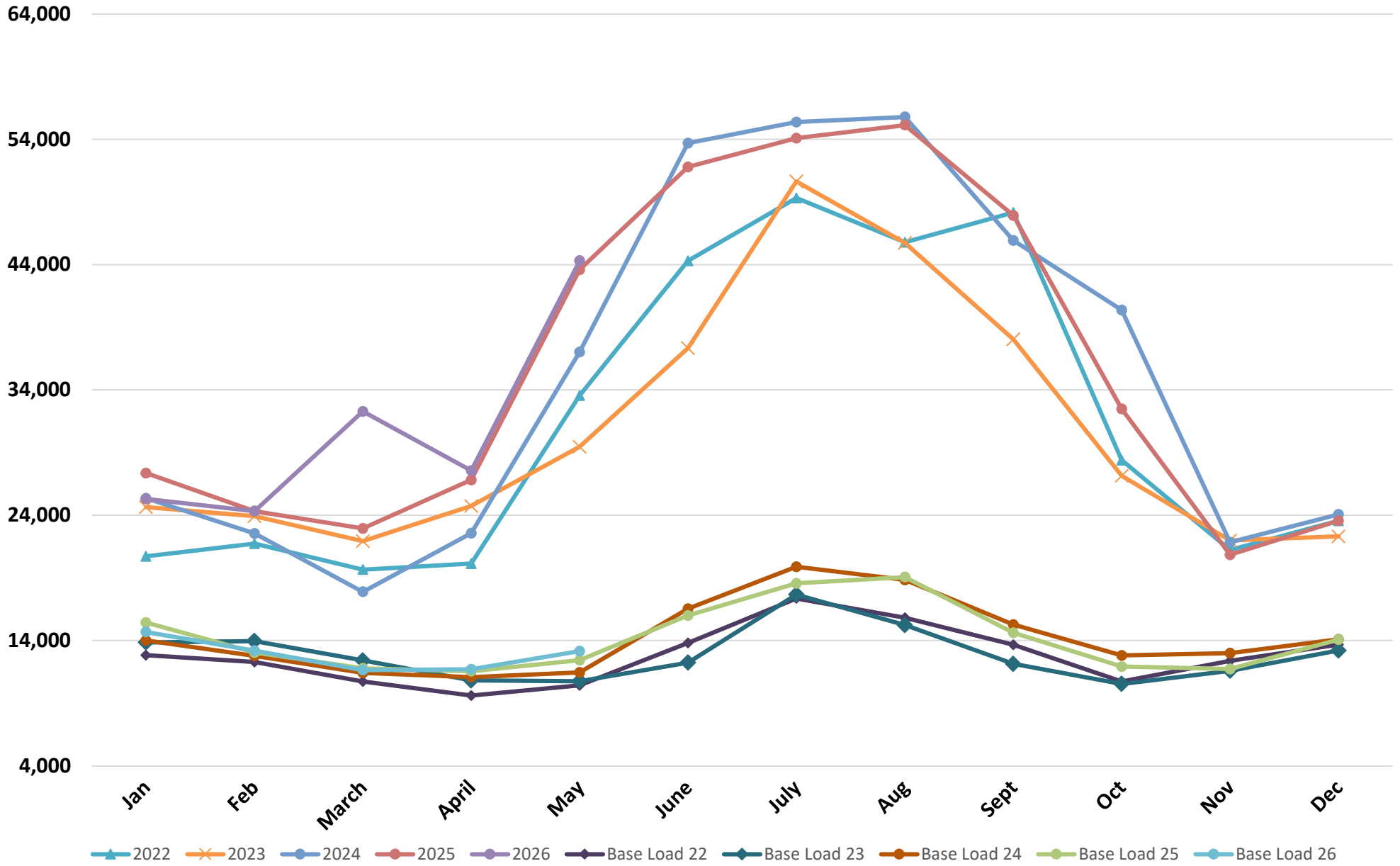
Avg Monthly Price



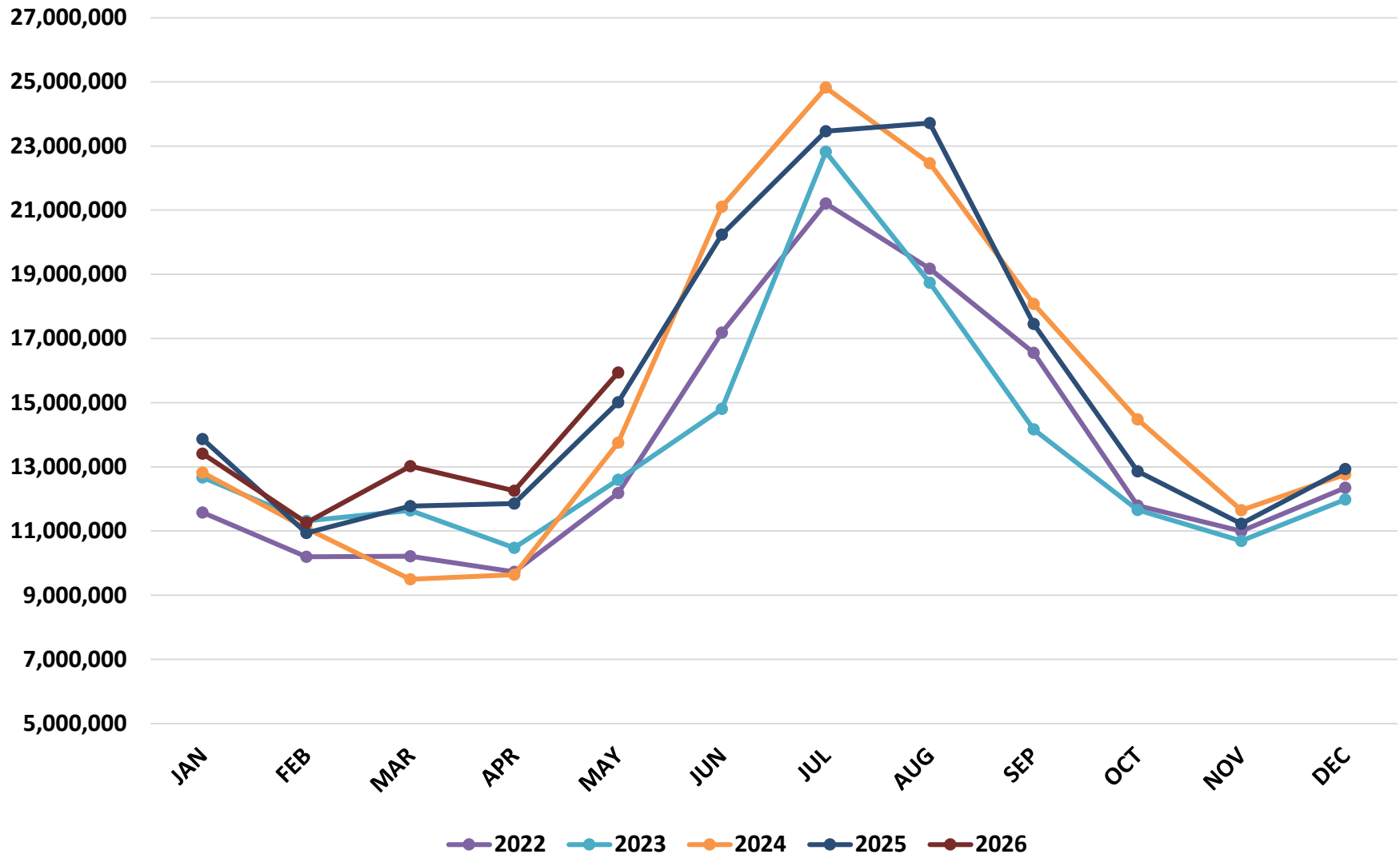
Avg Monthly Price (5 Yrs)



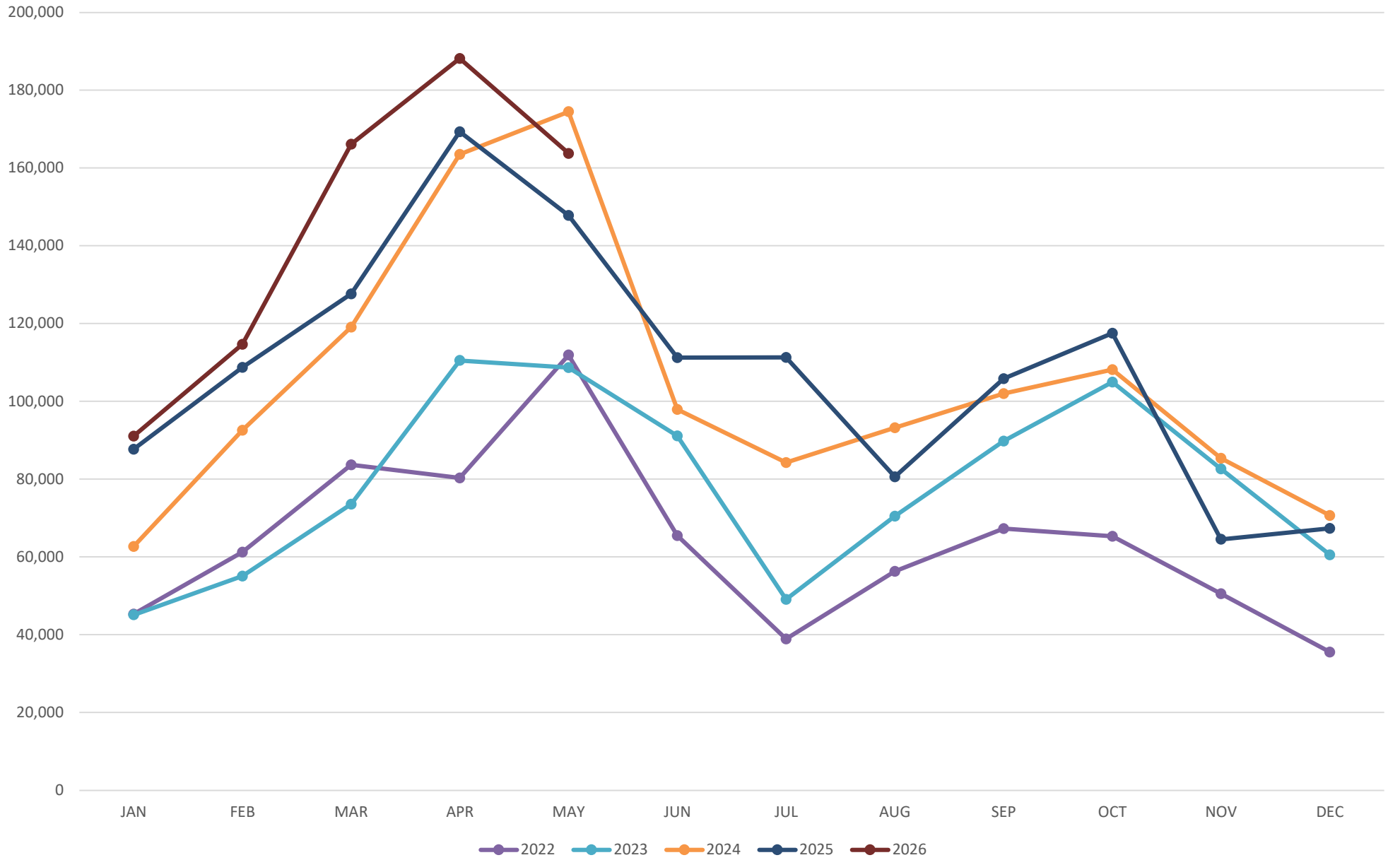
2022 - 2026 KW LOAD



2022 - 2026 KWH LOAD



Solar Kwh



STANDARDS AND SPECIFICATIONS

HURRICANE CITY



DESIGN AND INSTALLATION OF UNDERGROUND POWER DISTRIBUTION SYSTEMS

BOOK NO. _____

ADOPTED BY HURRICANE CITY COUNCIL

JUNE 06, 1996

Updated - December 01, 1996

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Updated - July xx, 2026

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SECTION 1 – UNDERGROUND POWER DISTRIBUTION SYSTEMS

GENERAL PREFACE

Hurricane City has prepared and approved this set of standards and specifications for the purpose of maintaining a safe, consistent, and reliable underground power distribution system. These standards are required to be used by anyone who is involved with design and/or installation of underground power distribution systems within Hurricane City limits.

If a Contractor needs to have Hurricane City Power, which may be referred to as HCP throughout this document, provide access to electrical facilities, they are required to set up an appointment to have HCP meet them at the job site.

All costs for underground power distribution systems are the responsibility of the Contractor/Developer unless otherwise stated in these Standards and Specifications.

If a Contractor/Developer re-plats or otherwise changes the underground power distribution system within a development, it will be the Contractor/Developer's responsibility to make sure the system meets the requirements of these standards and specifications. All costs for the changes to the underground power distribution system will be the responsibility of the Contractor/Developer. HCP will do all primary terminations at the cost of the Contractor/Developer.

If these standards conflict with federal, state, or local codes, the more stringent requirement is to be followed.

In consultation with the Hurricane City Power Board, HCP may make minor adjustments to these standards at any time to address unique or unusual circumstances or to align with updated industry standards. Within 30 days of making such adjustments to these standards, HCP shall submit a report to the Hurricane City Council detailing all changes to these standards.

SECTION 2 – JOINT UTILITY

DESIGN AND CONSTRUCTION STANDARDS

These Design and Construction Standards are to be followed at all times. In unusual or unique circumstances, HCP may authorize deviations to these standards in consultation with the Hurricane City Power Board.

- A proximity detail and street locations will be required on all utility drawings.
- For joint utilities trench details, see Drawing DR-18
- For placement and layout of utilities, see Drawings DR-21, DR-22

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UNDERGROUND POWER DISTRIBUTION SYSTEMS

- For burial depths, see Drawing DR-18
- Professional engineers licensed in the state of Utah will be required to submit sealed utility drawings (drawings that are stamped by a professional engineer) as per the standards contained herein. All utilities (i.e., gas, cable, phone, power, sewer, and water) will be shown on the appropriate drawings. The utility drawings are subject to approval by the City Staff. All drawings are to be submitted in AutoCAD or PDF. **Plans must include a full utility layout page and an electrical-only page.**
- Power infrastructure will generally be located on the north and west side of roadways. In new developments with sidewalks, the power infrastructure will be located at the back of the sidewalk where possible. In developments without sidewalks, the power infrastructure will be five feet (5') back of curb. Locations must be approved by City Staff.
- It is at the sole discretion of HCP to install or allow developers to install overhead power lines in place of underground buried power lines at any location considered a main roadway, temporary power source, or main gut line.
- Cable and phone boxes will be installed and located in accordance with Drawing DR-21, DR-22.
- For commercial projects building layout, square footage, and load calculations will be required as well as an application for power service containing panel size in amps, number of meters/breakers, and voltage needed.
- For high density projects, the number of units per lot and building, panel size in amps, number and sizes of meters/breakers and voltage needed will be required.
- Contractors must have a valid Hurricane City Underground High Voltage Certificate to install electrical facilities in the Hurricane City Power System.
- Journeymen electricians may install service cables from Hurricane City Power's designated connection point to the customer's meter base. This includes all conduit and wire installation.
- Electrical Contractors will be responsible for installing the joint trench as described and shown on Drawing DR-18.
- Any lot being zoned as commercial/industrial shall be configured for 3-phase power.

SECTION 3 – UNDERGROUND CONSTRUCTION STANDARDS

CABLE INSTALLATION

I. SCOPE

This standard outlines installation details for primary and secondary cable used in underground distribution.

II. DEFINITIONS

A. SECONDARY CABLES

All cables inside a transformer and from secondary box to secondary box with voltage ratings of 600 volts or less including grounding conductors.

B. PRIMARY CABLES

All cables with voltage ratings greater than 600 volts. The thickness of conductor insulation shall be 220 mils.

C. SERVICE CABLES

All cables from a transformer or secondary box to the meter with voltage ratings of 600 volts or less.

D. BURIAL DEPTH

Vertical distance from the surface under which cables are installed to the center of the conduit nearest the surface. See drawing DR-18 for secondary cables and primary cables. Service cables shall follow applicable NEC standards.

III. INSTALLATION

A. CABLE INSTALLATION METHODS

i. Conduit Sizes

See Drawing DR-18.

ii. Loading Guidelines

Loadings on Hurricane City's system are limited to the values listed below. These limitations are set to allow the city to maintain three-phase balanced loads on the system's main overhead circuits.

iii. Primary Conductor Loading

1. A maximum of 400 kVA connected is allowed for single phase.

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UNDERGROUND POWER DISTRIBUTION SYSTEMS

2. A 1/0 AWG aluminum conductor is required where the connected single-phase and/or three-phase load is less than 400 kVA connected per cable/phase or total 1,200 kVA connected for three-phase cable.
 3. When the connected single-phase and three-phase loads exceed 400 kVA per cable a backbone-feeder system shall be used. It is required that a 4/0 AWG aluminum conductor be used for the backbone when the total connected kVA is less than 3,600 kVA. When the total kVA connected exceeds 3,600 kVA an aluminum conductor of 750 kcmil is required. The size of the conductor shall be approved by HCP. The connected load shall be divided so that it can be fed by 1/0 AWG aluminum conductor feeders.
 4. If 750 kcmil aluminum conductor is required for the backbone feeder, switchgear must be installed.
 5. All areas or subdivisions with potential development beyond their property may be required to extend power infrastructure to the far side of the property.
 6. All main 750 kcmil trunk lines will be designed and installed to accommodate current or future back-feed.
- iv. SECONDARY CONDUCTOR LOADING
1. Secondary conductor loading shall meet all code requirements in NEC 310.16.

B. CABLES IN CONDUIT

i. MISCELLANEOUS INSTALLATION INSTRUCTIONS

1. Cables shall be pulled so that all conduit and bends will be installed and backfilled before any wire is pulled. This will result in minimum tension on the cables.
2. Any pulls over 950 feet must be approved by HCP.
3. In highly congested switch basements or where cables must be bent sharply to permit pulling, a feed-in tube shall be used for pulling cables. This will reduce pulling tensions and prevent damage to the cables being pulled and to other adjacent cables.
4. Single-phase conductor cables must be installed one cable per conduit and conduit must be nonmetallic as per requirements.

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5. Three-phase conductor cable must be installed three cables per conduit and conduit must be nonmetallic as per requirements.
6. Before making a pull, conduits shall be cleared and free of dirt, rocks, etc.
7. Pulling lube shall be used to facilitate pulling of primary and secondary cables. Compounds shall be compatible for use with high voltage cable shield(s).
8. When two or more cables (secondary) and/or bare conductors are pulled into one conduit, they shall be pulled at the same time.
9. Primary cables shall not be installed in the same conduit as secondary or communication cables.
10. Primary or secondary cables shall not be pulled into plastic conduit until all conduit joints made using plastic conduit cement have been allowed to dry for at least one-half (1/2) hour.
11. Sufficient excess cable shall be pulled into all duct runs to allow at least five feet (5') of cable to be removed from each end of the installed cable while providing adequate cable for termination or splicing. Removal of the five feet (5') of cable will eliminate cable damaged by pulling grips from the system.

ii. MAXIMUM PULLING LINE TENSIONS

When pulling cable(s) into conduit, the pulling line used shall have a safe working load rating (minimum) equal to the manufacturer's specification maximum allowable pulling line tensions. An approved hydraulic pressure cable tension monitoring system or dynamometer will be used on all pulls where the cable(s) cannot be pulled by hand.

iii. PULLING EYES AND GRIPS

Cables shall be pulled into conduit with a pulling eye attached to the cable's conductor or a pulling grip placed over the cable sheath, insulation, or jacket.

iv. PULLS WITH BENDS AND/OR SWEEPS

Extreme care must be exercised when pulling cable(s) into runs containing sweeps or bends. There are two concerns; 1) the cable

manufacturer's maximum recommended pulling tension must not be exceeded, and 2) the cable manufacturer's maximum sidewall bearing pressure is not to be exceeded. Different manufacturers of cable have differing requirements as to the maximum pulling tension depending on the type of pulling used (pulling grips such as "Kellams" or pulling eyes affixed to the cable's conductor). Sidewall bearing pressures are also dependent on the manufacturer. It is the engineer's responsibility to calculate expected cable-pulling tensions and sidewall bearing pressures based on the manufacturer's recommendations. Pulling tension calculations shall be provided to HCP for approval.

v. THE NUMBER OF 90-DEGREE AND 45-DEGREE ELBOWS WILL BE LIMITED TO THE FOLLOWING

1. For secondary or primary conduit runs using 4" PVC or less, the number of 90-degree elbows shall be limited to two (2), and if needed one (1) 45-degree elbow may be used in addition to the two (2) 90-degree elbows.
2. For primary conduit runs using 6" PVC, the number of 90-degree elbows shall be limited to one (1).
3. Any additional elbows (90 or 45-degree) needed to be installed must be approved by HCP.

vi. BENDING RADIUS FOR CABLES

The minimum bending radius for both single and multiple conductor cables shall be per manufacturer's specification.

vii. BURIAL DEPTH

See drawing DR-18.

viii. SOIL COMPACTION

Backfill placed over primary and/or secondary cables must be compacted. Machine compaction shall be used after placing a minimum of twelve inches (12") of fill over the conduit.

Refer to the conduit installation section for compaction requirements.

ix. MULTIPLE PRIMARY CIRCUITS IN ONE TRENCH

When the cables comprising two primary circuits (whether single or three-phase) are installed in a common trench the horizontal separation between the two circuits shall be six inches (6") minimum.

NOTE: This requirement is not meant to prohibit random lay of different phases of the same circuit in a common trench.

Table 1

**CLEARANCES FROM UNDERGROUND POWER CABLE TO OTHER
UNDERGROUND UTILITIES**

Water:	5 Feet horizontal
Sewer:	5 Feet horizontal
Natural Gas:	10 feet horizontal
Cable TV:	1 foot vertical
Phone:	1 foot vertical

CABLE MARKING & LOCATION

I. SCOPE

This specification details the standard method to be used for marking primary and secondary underground cables to indicate the general direction from which each cable extends from a given site.

It also details a method for identifying individual phases in multi-cable primary and secondary cable systems.

II. INSTALLATION

A. DIRECTION IDENTIFICATION

Primary and secondary cables shall be marked with one tag indicating direction or exit from underground facilities (i.e., vaults, primary junction boxes, switch basements, secondary junction boxes, transformers, or splice boxes). This tag shall indicate the general direction of the cable(s) to the next facilities where the cable is located and the length of the cable. There shall be adequate space left available for HCP to add the phase of the cable as

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well as any applicable transformer numbers. The tags used must be approved by the HCP staff.

All tags will be labeled with the next point of connection (i.e. Transformer 1 to Transformer 2).

All equipment will be numbered prior to tagging the cable in order to be accurate. The tagging will be inspected by HCP personnel prior to energizing.

NOTE: Approved 4" x 4" tags (cow tag) can be purchased at any Intermountain Farmers outlet.

B. PHASE IDENTIFICATION

When individual phases in a primary or secondary multi-cable installation are to be identified, bands of colored tape shall be used. Each phase shall be identified with bands as follows:

"A" PHASE.....	BLACK
"B" PHASE.....	RED
"C" PHASE.....	BLUE

C. SAFETY

Do not take shortcuts or skip safe working procedures. Regardless of the accuracy of cable labeling, cable labeling cannot be relied upon when working and handling cables. The energized status of any individual cable must be tested. Proper cable grounding procedures must be followed.

CONDUIT INSTALLATION

I. SCOPE

These standards outline installation details for plastic conduit (PVC) used in underground distribution.

II. DEFINITIONS

I. PLASTIC CONDUIT

Conduit shall be schedule 40 PVC.

Steel conduit shall not be used without the approval of HCP.

II. BURIAL DEPTH

i. Conduit

Vertical distance measured from the surface under which conduits are installed to the center of the conduit nearest the surface. See drawing DR-18.

ii. Concrete-Encased Conduit

Vertical distance measured from the surface under which conduits are installed to the top of the concrete envelope surrounding the conduits. All concrete encased conduit must be approved by HCP.

III. SWEEP

Changes in direction of a conduit or group of conduits with an angle of bend of 10 degrees or less or a radius of bend of fifteen feet (15') or more.

BEND

Change in direction of a conduit or group of conduits that, due to the angle of bend or radius of bend, cannot be defined as a sweep.

III. APPLICATIONS

I. CONDUIT DEPTH

Refer to drawing DR-18 and DR-20 for determining conduit depth and location for primary and secondary cable applications.

II. CONDUIT SIZES

Refer to Drawing DR-18 for determining conduit sizes for primary and secondary conductors.

III. WARNING TAPE

A minimum of six-inch (6") red warning tape shall be installed directly above the conduit, twelve inches (12") below final grade for the length of the entire trench.

IV. INSTALLATION

The minimum allowable burial depths for non-encased and concrete encased conduits are shown in the following table.

Table 2
BURIAL DEPTHS-NON-ENCASED AND ENCASED CONDUIT

Installed Under Paved Surface			All Other Locations	
	Non-Encased Conduit	Concrete Encased Conduit	Non-Encased Conduit	Concrete Encased Conduit
SCH 40 PVC Conduit Secondary	36 Inches	See Notes	36 Inches	See Notes
SCH 40 PVC Conduit Primary	48 Inches	See Notes	48 Inches	See Notes

NOTES:

- If, in a particular installation, burial depths less than permitted by the table above are required, the reduced burial depths must be approved by HCP.
- Concrete-encased conduit must be covered with a three-inch (3") envelope. There must also be six inches (6") of select bedding and eighteen inches (18") of fill on top of the concrete encasement. See Drawing DR-19.

A. TRENCHES FOR CONDUITS

i. TRENCH BOTTOMS

When conduits are directly buried or concrete encased, the bottom of the trench into which the conduits are placed shall be free from rocks exceeding one inch (1") in their largest dimension. When the trench bottom contains rocks exceeding this size requirement, the trench shall be excavated six inches (6") deeper than the burial depth required for the conduits and then backfilled to the required burial depth with sand or screened backfill. Backfill shall be compacted to

95 percent (95%) of the maximum dry density prior to installation of conduit.

ii. TRENCH BACKFILL

The JUT (Joint Utility Trench) trench shall be backfilled with 1-inch-minus material from the bottom of the trench to the top. No spoil material shall be used unless it is screened, 1-inch-minus, and compactable.

- Direct buried plastic conduit
- Concrete encased plastic conduit
 - Concrete encased conduit is not the standard and will only be accepted in extreme circumstances approved by HCP.
- Drying time for concrete before backfilling
 - Backfill shall not be placed in trenches containing concrete-encased conduits until the concrete has been allowed to set for at least 36 hours

iii. SOIL COMPACTION

Backfill placed over direct buried plastic conduit must be compacted; machine compaction shall not be used within twelve inches (12") of the conduits. For concrete encased plastic conduits, machine compaction may be used without restriction in proximity to the concrete envelope.

iv. CONCRETE ENVELOPE DIMENSIONS

1. Minimum Envelope Dimensions

When conduits are encased in concrete, they shall be enclosed by a concrete envelope. See Drawing DR-19.

2. Concrete

A three-quarter inch (3/4") minus 3000 PSI mix as per ASTM (American Society for Testing and Materials) C94 specification is required. In all cases a Type 2 modified, or Type 5 cement will be used. Air entraining agents shall not be used. Slump shall not exceed six inches (6") at site. The concrete shall be poured slowly to prevent the conduit from floating. Where necessary the conduit may need to be staked in place.

Concrete shall be vibrated to ensure that all the spaces around the conduit are filled.

v. CONDUIT BENDS AND SWEEPS

1. Minimum Radius

The minimum radius of bends in conduits shall not be less than ten (10) times the diameter of the largest conduit being installed. If smaller minimum bending radii are required, they shall not be less than the manufacturer's recommended minimum bending radii of the cables to be installed in the conduits.

vi. SHORING, LAYING BACK, SPOIL PLACEMENT AND RETENTION

When workers must enter a trench to install conduits, the trench shall be shored or laid back and the spoil shall be effectively retained and placed back from the edges of the trench as required by local state and national codes or ordinances to ensure that the workers are not subject to moving ground or cave-ins.

vii. CONDUIT REPAIR

If conduit is damaged during installation, damaged section(s) shall be removed and replaced with like conduit and couplings. Use of split ducts for repair of damage during installation is not permitted. A full stock length (usually 10-foot segments) will be used to repair a damaged section. Repair collars will not be allowed.

viii. RISER POLE CONDUIT INCLUDES POWER, PHONE, TV

Conduits for a riser pole shall be rigid steel or aluminum and shall continue up the pole from the PVC elbow to the top of the riser. The riser pole conduit shall be straight and supported with a six-inch (6") aluminum-strut system. Any crooked or misaligned conduits will not be accepted. The contractor shall install the first ten feet (10') of the riser and one six-inch (6") standoff. The city will provide the rest of the materials for the completion of the power riser at the contractor's expense. Placement and height of riser shall be approved by HCP personnel. See Drawings DR-26.

NOTE: A fee will be charged for the installations. Please see HCP personnel for current fees. These fees are subject to change without notice.

INFRASTRUCTURE INSTALLATION

I. SCOPE

These standards outline installation details for primary equipment (transformer pads, splice boxes, switch basements, and sectionalizing cabinets) used in an underground distribution system.

II. DEPTH

i. SWITCH BASEMENT INSTALLATION DEPTH

The switch basement shall be installed with the top being within six inches (6") above the finished grade or sidewalk.

Splice boxes shall be installed the same as switch basements.

ii. TRANSFORMER PAD INSTALLATION DEPTH

The transformer pad shall be installed 4"- 6" above finished grade or sidewalk.

iii. SECTIONALIZING CABINETS

Sectionalizing Cabinets shall be installed according to Standards Drawings DR-14, DR-21, and DR-22. With the cabinet extending 18 inches below finished grade.

B. LOCATION

Primary enclosures shall be located in a manner that adjacent obstacles such as fences, buildings, etc. do not interfere with operation, installation, or maintenance of the enclosures. If less than ten feet (10') of clear space is to be provided, HCP approval is required.

Electrical equipment shall be installed within 6"-12" from the back of sidewalk or walking path.

If a streetlight is present on a property line, the electrical equipment shall be installed 12"-18" to the right side of the edge of the street light base. If no light is present the electrical equipment shall be installed 6"-12" to the right of the property line as shown in drawing DR-21.

EQUIPMENT, LINE LOCATION, AND RIGHT-OF-WAY REQUIREMENTS

I. SCOPE

These standards outline the location, with respect to property lines, of underground distribution facilities. See Drawings DR-20, DR-21, and DR-22.

II. BACK LOT AND SIDE YARD LINE INSTALLATIONS

Installation along back-lot and side yards will not be allowed. If front installation is not possible, contact HCP for further review of electrical installation plan.

III. RIGHT OF WAY REQUIREMENTS

Before any power system design approval, the property owner or developer will be required to grant Hurricane City the proper easements and right-of-way at no cost to the city. Additional easements may be required for equipment access.

The standard requirements are as follows:

Residential:

10 feet (10') on the front of each lot or parcel

Multi-Building or Condominium:

10 feet (10') on the front of each lot or parcel

Commercial:

15 feet (15') on the front of each lot or parcel

Common Areas:

The equipment (i.e. transformers, vaults, switches) will be placed along access roads as per standards. If placement along access roads cannot be accomplished as determined by HCP, equipment will be placed with at least ten feet (10') of clearance from any permanent structure.

All power equipment will be designed and installed as per the location drawings contained in these specifications; Drawings DR-20, DR-21, and DR-22 in order to assure equipment falls within the established right-of-way and easements and to maintain consistency of equipment placement throughout the city.

SECTION 4 – PRIMARY AND SECONDARY INSTALLATION

PRIMARY JUNCTION INSTALLATION

I. SCOPE

These standards outline installation details applicable to fused 15 kV, 200 and 600-ampere primary junction installation.

II. INSTALLATION

- A. All single-phase pad mount transformers will have a ground sleeve, see Drawing DR-11. All three-phase transformers will be placed on the transformer pad as shown on Drawing DR-10.
- B. Fusing requirements for any residential, industrial or commercial facility will be reviewed, coordinated, and approved by HCP. Any system that has the potential of serving more than one residential, commercial or industrial location or more than one circuit/feeder the fusing will be determined by HCP and each subdivision or development will be fused according to its needs.
- C. Connection requirements vary between the type of service being rendered (residential, commercial, or industrial) and location on the electrical system.
- D. No single-phase tap shall have more than 400 kVA connected load except in commercial or industrial three-phase applications.
- E. No single-phase transformer shall exceed 100 kVA.
- F. Where a switch cabinet is required, no more than nine (9) fused single-phase taps can be fed from the cabinet.
- G. All transformers and vaults shall utilize approximately 10 to 12 feet of #4 solid bare copper for ground connections.

Residential Three-Phase:

Subdivision will be tapped via appropriate sectionalizing cabinets or switches, see Drawings DR-14, and DR-15. A set of three (3) fused disconnects will be provided on the riser pole serving the subdivision. Fuse sizing must be approved by HCP.

Commercial Three-Phase:

Fuses shall be sized based on connected kVA and shall coordinate with the up-line protective devices. HCP personnel shall be consulted early in the planning stage to determine the appropriate maximum fuse size. 750kcmil backbone feeders will be required to be looped or

developed in such a manner as to have future loop and back-feed capabilities.

Residential and Commercial:

When fused switchgear is required the developer/customer is responsible for paying a prorated share of the current costs for the existing three-phase fused bay. Current costs to be obtained from HCP.

Table 3
FUSE SIZES

Description	Location	Fuse Size	Cable Size
Single-Phase Less Than 400 kVA	Riser Pole Switch Fuse Bay	40T 40E	1/0
Three-Phase 400 kVA-1200 kVA	Riser Pole Switch Fuse Bay	40T 40E	1/0
Three-Phase 1200 kVA-3600 kVA	Riser Pole Switch Fuse Bay	80T 80E	4/0

Note: The fuse sizes shown are a maximum. Fuse sizing must be approved by HCP.

III. TESTING BEFORE ENERGIZING

A. LOADBREAK ELBOWS AND INSULATING RECEPTACLES

Primary Junction Installation, which includes load-break elbows and/or insulating receptacles, shall be operated before the installation is energized to ensure there is no interference from concentric neutral conductors, adjacent elbows, etc.

B. SWITCHES

Test operate all switches in fused, primary installations prior to energizing to ensure proper operation and that adjacent obstacles such as fences, walls, etc. do not interfere with the switch operating handle.

IV. LOCATION

Primary junction installations shall be located in a manner that adjacent obstacles such as fences, buildings, etc. do not interfere with installation or operation and maintenance of the equipment.

SECONDARY JUNCTION INSTALLATION

I. SCOPE

These standards outline the installation of secondary junction boxes and mobile home park meter pedestals.

II. INSTALLATION

A. BURIAL DEPTHS

i. Secondary Junction Boxes

1. Secondary junction boxes shall be installed with 6 inches (6") above final grade and be located six inches (6") behind sidewalk. See drawings DR-12 and DR-13.
2. Drive-over secondary boxes will not be permitted if box contains (1) 500 kcmil or (2) 350 kcmil wires. Drive-over concrete boxes are not a power department standard and will only be allowed in special circumstances.

ii. Mobile Home Park Metering Pedestals

1. Mobile Home Park Metering Pedestals shall be installed to the depth indicated on the pedestal by the manufacturer, see Drawings DR-25.

III. SAFETY

A. LOCKING

i. Secondary Junction Boxes

1. All secondary junction boxes shall be bolted with Penta head bolts. Standard tumbler-type locks or other devices are not approved for this application.

ii. Mobile Home Park Meter Pedestals

1. The access panel to the unmetered bus in all mobile home park meter pedestals shall be locked with pedestal equipment locks. Standard tumbler-type locks or other devices are not approved for this application.

CABLE TAPS (200 AMPERES)

I. SCOPE

These standards outline installation details for 200 ampere, 15 kV load-break junctions used in underground distribution.

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II. INSTALLATION

A. GENERAL

200 ampere, 15 kV load-break junctions must be installed in primary enclosures. Not suitable for direct burial.

B. TESTING BEFORE ENERGIZING

Operate load break elbows and insulating receptacles before energizing 200 ampere, 15 kV load break junction installations to ensure:

- i. They can be operated without interference from concentric neutral conductors, adjacent elbows, etc.
- ii. The mounting location of the load break junction is such that rings and covers or doors of primary enclosures, adjacent junctions, etc. do not interfere with operations

Elbow arrestors or stand-off arrestors or a combination of the two will be required at all locations deemed necessary by HCP.

CABLE TAPS (600 AMPS)

I. SCOPE

These standards outline installation details applicable to 15 kV, 600 ampere splice-tap configuration used in underground distribution systems.

II. INSTALLATION

When assembling 15 kV, 600 ampere T-body elbow configurations, a spanner wrench may be used to facilitate installation or removal of connector plugs and reducing tap wells (with or without studs). They are not suitable for direct burial.

III. CAUTIONS

600 Ampere elbows are dead-break and only suitable for operation when de-energized.

SECTION 5 – TRANSFORMER INSTALLATION AND BID SPECIFICATIONS

TRANSFORMER INSTALLATION

I. SCOPE

These standards outline the installation of single-phase and three-phase transformers used in underground distribution.

II. EQUIPMENT

A. PRIMARY SYSTEM CONFIGURATION

i. Single-phase pad mounted transformers

Single-phase pad mount transformers should be equipped with two primary bushings for installation in loop or radial feed primary systems.

ii. Three-phase pad mounted transformers

Three-phase pad mount transformers shall be purchased and installed with six primary bushings and feed-through capabilities.

III. INSTALLATION

A. Connect the secondary ground strap, supplied on the pad mounted transformer, between the transformer tank wall and the secondary neutral.

B. The soil backfill to be placed around the transformer ground sleeve shall be compacted to within 95 percent (95%) of the maximum dry density to support the transformer. A level pad around all sides of five feet (5') shall be maintained.

CAUTION: Do not disconnect either end of the secondary ground strap unless the transformer is de-energized.

IV. TRANSFORMER SIZING

A. Residential transformers will be incrementally sized based on 8 kVA per 200 amperes. Transformer size not to exceed 100 kVA.

B. Commercial/Industrial transformers will be sized by HCP.

V. TRANSFORMER POLICY

It is permissible for a Contractor to acquire transformers from sources other than HCP, provided the transformer(s) fully meets Hurricane City specifications.

The contractor shall be responsible for providing the following prior to energizing the circuit or transformer:

- Certified load loss certificate by serial number of unit
- Certificate from manufacturer:
 - Compliance of standards testing required in the transformer specifications
 - Warranty
 - Polychlorinated Biphenyl (PCB) certificate
- Numbering of transformer and information needed
 - All nameplate information
 - Street address

It is the responsibility of the contractor to see that HCP inspector receives transformer information before the final inspection walk-through. The city power inspector will assign a number for each transformer to be painted on the front of the transformer.

All appurtenances to the transformers such as, but not limited to, elbows, neutral grounding bushings (when required), stand-offs, dummy receptacles, etc. will be provided by the contractor. Single-phase transformer secondary bar connectors capable of accepting (6) 500kcmil aluminum conductors shall be supplied by the Contractor.

SINGLE-PHASE PAD MOUNTED DISTRIBUTION TRANSFORMER

I. SCOPE

This specification outlines the electrical characteristics and the mechanical features of single-phase, 60Hz; oil-filled, pad-mounted, dead-front compartmental-type distribution transformers with separable insulated high voltage.

II. STANDARDS

- A. All transformers shall be constructed and tested in accordance with the latest revision of applicable ANSI, and NEMA standards.
- B. No used or remanufactured material or components will be acceptable.

III. RATINGS

- A. KILOVOLT AMPERE (kVA) RATINGS

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- i. The standard kVA ratings shall be one of the following: 25kVA, 37.5kVA, 50kVA, 75kVA, or 100kVA as required.
- ii. These standard kVA ratings are continuous and based on not exceeding either a 65° C average winding temperature rise or an 80° C hot spot temperature rise. The temperature rise of the insulating oil shall not exceed 65° C when measured near the top of the tank.

B. VOLTAGE

- i. The high voltage rating shall be 12470Y/7200 volts. The low voltage rating shall be 240/120 volts unless otherwise directed by HCP.

C. BASIC IMPULSE INSULATION LEVEL

- i. The basic impulse insulation level (BIL) shall be 95 kV.

IV. CONSTRUCTION

A. GENERAL

- i. All transformers shall consist of a transformer tank and a high and low-voltage cable termination compartment. These components shall be assembled as an integral, tamperproof, and weatherproof unit for mounting on a pad. There shall be no exposed bolts, screws or other fastening devices which are externally removable. There shall be no openings through which foreign objects such as wires or rods might be inserted to contact live parts.

B. HIGH AND LOW-VOLTAGE COMPARTMENT

- i. Access to the high and low-voltage compartment shall be through a hinged door suitable for locking with a padlock.
- ii. The high-voltage segment of the compartment shall contain the high voltage terminations and be provided with an elbow accessory parking stand. High voltage will be of the loop type/feed through configuration.
- iii. The low-voltage segment of the compartment shall contain the low-voltage terminations.

C. TANK

- i. All transformer tanks shall have sealed tank construction and sufficient strength to withstand a pressure of seven (7) PSIG without permanent distortion.
- ii. A tank that has sealed tank construction is one that seals the tank from the atmosphere.
- iii. The tank shall remain effectively sealed for a top oil temperature range of -5°C to 105°C.

D. LOW-VOLTAGE TERMINATIONS

- i. The electrical characteristics of the completely assembled low-voltage terminations shall be:
 - 1. Insulation Class – 1.2 Kv
 - 2. Basic Impulse Insulation Level (BIL) - 30 kV
 - 3. One minute withstand – 10 kV
- ii. The terminals of the low-voltage terminations shall be as shown in applicable ANSI standards.
- iii. The number, location, and arrangement of the low-voltage terminations shall be as shown in applicable ANSI standards.
- iv. All low-voltage terminations shall be externally bolted to facilitate field replacement.

E. HIGH-VOLTAGE TERMINATIONS

- i. All high-voltage terminations shall be 15 kV class universal bushing wells and inserts suitable for use with 15 kV class load-break elbow connectors.

NOTE: All load-break bushing inserts shall be provided with the transformer.

- ii. All high-voltage terminations shall be externally bolted to facilitate field replacement.
- iii. The number, location and arrangement of the high-voltage terminations shall be as shown in applicable ANSI standards.

F. NEUTRAL CONNECTIONS

- i. The H2 end of the high-voltage windings shall be connected to the transformer tank internally and this connection shall be securely grounded to the tank and shall be independent of all other connections.
- ii. The low-voltage neutral shall be a fully insulated bushing. A ground pad shall be provided on the outer surface of the tank. A removable ground strap shall be provided and connected between the low-voltage neutral bushing and the ground pad.

G. CORE AND WINDINGS

- i. One-piece core construction is desired. Where other construction is used, minimum assembly joints shall be provided. For approved two-

part cores, the core shall be held together with bands and torqued bolts. Crimped banding is not acceptable for ratings over 50 kVA.

- ii. Copper or aluminum winding conductors are desired.
- iii. Core material may be either silicon steel or amorphous.
- iv. Core losses shall be minimized by the core material and core construction.

H. INSULATION

- i. All insulating paper used as layer insulation in transformer coils shall be coated on both sides with a thermosetting adhesive and properly cured prior to impregnating with oil or the coils shall be wound with primary conductor containing a thermosetting adhesive that when properly cured will form an effective bond.
- ii. Insulating/cooling fluid within the tank shall be electrical-grade mineral oil or a nonflammable environmentally accepted fluid.
- iii. Fluids shall be certified and indicated on the nameplate to be less than 1 part per million (ppm) polychlorinated biphenyl (PCB) content.
- iv. For fluids other than mineral oil, the quotation shall include chemical and electrical characteristics and a statement of being non-PCB.

I. GROUND CONNECTION

- i. The tank shall have a welded ground lug boss attached on the secondary side of the tank near the bottom of the tank, clear of the secondary bushings and attached conductors.
- ii. The grounding boss shall be free of paint and shall be 7/16 inch (7/16") deep and threaded for a one-half inch (1/2") 13 NC grounding stud or connector.
- iii. The tank cover shall have a grounding strap between the cover and the tank.

V. ACCESSORY EQUIPMENT

A. HIGH-VOLTAGE PROTECTIVE FUSES

- i. All transformers shall be equipped with an externally removable, oil immersed, expulsion fuse, in a load-break bayonet suitable for hot stick operation. This fuse must be designed to protect the transformer in the event of internal or secondary faults or under overload conditions.

B. PRESSURE RELIEF DEVICE

- i. Each transformer shall be equipped with a self-actuating relief device to relieve slow pressure buildup and to automatically vent when

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pressure reaches + 10 PSIG and recloses when pressure falls to + 6 PSIG.

C. ROLLING, LIFTING, AND MOUNTING FACILITIES

- i. The transformer shall be equipped with lifting provisions of adequate strength and size and arranged on the transformer to permit lifting of the completely assembled and oil-filled unit.
- ii. An internal flange shall be provided at the base of the high and low-voltage compartment to provide means for mounting the transformer on a pad.

D. IDENTIFICATION NAMEPLATE

- i. An identification nameplate shall be located in the low-voltage segment of the high and low voltage compartments and shall be readable with cables in place.
- ii. If the nameplate is mounted on a removable part, the manufacturer's name and the transformer serial number shall be permanently affixed to a non-removable part.
- iii. The identification nameplate shall conform with all applicable ANSI standards.

VI. TESTING

- A. All transformers shall be tested in accordance with ANSI standards. All transformers shall be capable of withstanding short circuit tests.

VII. FINISH

- A. The transformer shall be given a durable, corrosion-resistant, green, or desert tan (as specified) outdoor finish capable of meeting or exceeding EEI finishing requirements.
- B. All transformer surfaces in contact with the pad shall be designed or treated to minimize corrosion.

VIII. SHIPPING AND LABELING INSTRUCTIONS

- A. Transformers shall be mounted on a pallet for shipment.
- B. A shipping tag indicating the kVA size, manufacturer, voltage ratings, serial number and purchase order number shall be attached to all transformers.

IX. LOSS EVALUATION

- A. Total losses will be invoiced at \$4.30 per watt over allowable losses according to the chart below.
 - i. Evaluated losses will be calculated by multiplying the appropriate dollar/watt values by guaranteed maximum load losses at maximum nameplate kVA rating and no-load losses at 100 percent voltage. These products will be added to the bid price for evaluation.

B. Total watt losses shall not exceed the following:

SINGLE-PHASE PAD-MOUNTED 120/240 VOLT

<u>kVA Rating</u>	<u>Losses in Watts</u>	<u>kVA Rating</u>	<u>Losses in Watts</u>
25 kVA	275 Watts	75 kVA	675 Watts
37.5 kVA	360 Watts	100 kVA	750 Watts
50 kVA	460 Watts	167 kVA	1,310 Watts

C. If the actual tested loss values exceed the guaranteed maximum values stated in the proposal of the Contractor, the Contractor will be charged a penalty value for every kilowatt by which the actual tested transformer losses exceed the guaranteed maximum losses upon which the proposal was evaluated. This penalty value will be the difference between the total actual test loss evaluation and the total guaranteed bid loss evaluation.

D. Transformers shall not be energized until all loss evaluation fees have been paid.

X. VENDOR EVALUATION

A. Vendor evaluations, as well as loss evaluations, will be used to determine the low bidder. Delivery dates will be of prime concern during the bid evaluation.

XI. EXCEPTIONS

A. Exceptions to this Specification shall not be accepted, unless approved by HCP. Any exceptions shall be noted in the proposal.

XII. WARRANTY

A. Manufacturers shall warrant to purchaser that the apparatus or service to be furnished hereunder shall be of the highest quality and free from defects in material, workmanship, and title and will be of the kind designated in the pertinent purchase order. The developer shall warrant the installed transformer for a period of twelve (12) months after the preliminary acceptance.

B. The Manufacturer shall guarantee that all transformers furnished under this specification are of first-class material and workmanship throughout, that they have been tested in accordance with this specification, and that the results of the tests comply with the requirements of this specification, and in lieu of other claims against it, agrees to replace or repair:

- i. Any transformer found to be defective in material or workmanship or found not to be in compliance with the requirements of this specification before or during installation of the transformer.

- ii. Any transformer failure during normal and proper use within the manufacturer's guarantee period which shows defects of materials or workmanship.
- iii. All transformers must be of new construction, no remanufactured transformers will be accepted. New construction means not used and is less than 2 years old.

THREE-PHASE PAD MOUNTED DISTRIBUTION TRANSFORMER

I. SCOPE

This specification outlines the electrical characteristics and the mechanical features of dead-front outdoor three-phase, 60 Hz, oil-immersed, self-cooled pad-mounted, compartment-type distribution transformer with separable insulated high voltage connectors.

II. STANDARDS

- a. All transformers shall be constructed and tested in accordance with all applicable ANSI and NEMA standards.
- b. No used or remanufactured material or components will be acceptable. All transformers must be of new construction; no remanufactured transformers will be accepted. New construction means not used and is less than 2 years old.

III. RATINGS

a. KILOVOLT AMPERE (kVA) RATINGS

- i. The standard kVA ratings shall be one of the following: 75 kVA, 112.5 kVA, 150 kVA, 225 kVA, 300 kVA, 500 kVA, 750 kVA, 1000 kVA, 1500 kVA, or 2000 kVA as required.
- ii. These standard kVA ratings are continuous and based on not exceeding either a 65° C average winding temperature rise or an 80° C hot spot temperature rise. The temperature rise of the insulating oil shall not exceed 65° C when measured near the top of the tank.

b. VOLTAGE

- i. The high voltage rating shall be 12470Y/7200 volts. The low voltage rating shall be 208Y/120 volts or 480Y/277 volts as required, unless otherwise directed and approved by HCP. Transformers must be wound in a Wye-Wye configuration.

c. TAP RATINGS

- i. The transformers shall be equipped with: two (2) 2-1/2 percent taps above and two (2) 2-1/2 percent taps below normal voltage. All taps shall be full capacity taps.
- ii. Tap changing shall be through the wall in the high voltage connection compartment.
- iii. Taps shall have the positions of the changer clearly marked to indicate actual voltage on the primary, or as a percentage (%) of above and below normal primary voltage.
- iv. Taps shall be operable only with the transformer de-energized.

d. BASIC IMPULSE INSULATION LEVEL

- i. The basic impulse insulation level (BIL) shall be 95 kV.

IV. CONSTRUCTION

a. GENERAL

- i. All transformers shall consist of a transformer tank and a high and low-voltage cable termination compartment. These components shall be assembled as an integral, tamperproof, weatherproof unit for mounting on a pad. The transformer shall meet the requirements for tamper resistance as set forth by the Western Underground Committee. There shall be no exposed bolts, screws or other fastening devices which are externally removable. There shall be no openings through which foreign objects such as wires or rods might be inserted to contact live parts.

b. TANK

- i. Transformer tank shall be suitable for outdoor installation. The tank shall be of a construction that effectively seals the tank interior from the atmosphere but will allow entry for service.
- ii. Construction of the seal shall maintain the integrity of the seal over an operating oil temperature range of -5° C to 105° C.
- iii. Tank construction shall be such that it has sufficient strength to withstand a pressure of seven (7) PSIG without permanent distortion.

c. HIGH AND LOW-VOLTAGE COMPARTMENT

- i. The high and low-voltage cable terminating compartment shall:
 - 1. Be compartmentalized into high-voltage and low-voltage segments by a suitable barrier.
 - 2. Include two doors, one for the high-voltage segment and one for the low-voltage segment. These doors shall have stainless steel hinges and pins and three-point latching with provisions

for padlocking. Unlocking the padlock shall permit access to the low-voltage segment of the terminating compartment only. Access to the high-voltage segment of the terminating compartment shall not be attained until an additional fastening device has been released.

3. Meet the dimensional requirements of applicable ANSI standards.
4. The high-voltage compartment shall be equipped with accessory elbow stands for each elbow.

d. TERMINATION ARRANGEMENT AND DIMENSIONS

- i. The termination arrangements and dimensions shall be in accordance with ANSI standards.

e. HIGH-VOLTAGE TERMINATIONS

- i. Configuration – The configuration of the high-voltage terminations shall be Loop Feed.
- ii. Type – The high-voltage terminations shall be 15 kV class universal bushing wells and inserts suitable for use with 15 kV class load-break elbow connectors.

The continuous current rating shall be 200 amperes

NOTE: All load-break bushing inserts shall be provided with the transformer.

f. LOW-VOLTAGE TERMINATIONS

- i. The terminals of the low-voltage terminations shall be as shown in applicable ANSI standards.
- ii. The configuration of the low-voltage terminations shall be as shown in ANSI standards.
- iii. Secondary low-voltage bushings shall include a full capacity neutral (grounded conductor) bushing.
- iv. The electrical characteristics of the completely assembled low-voltage bushing and terminals shall be:
 1. Insulation Class – 1.2 kV.
 2. Basic Impulse Insulation Level (BIL) – 30 kV.
 3. One minute withstand – 10 kV.
- v. Internal connections to the secondary bushings shall be by lugs welded to the secondary conductor and bolted to the bushing stud.

g. FUSING EQUIPMENT

- i. The transformer shall be equipped with externally removable, oil-immersed, expulsion fuses in load-break bayonets, in series with under-oil partial range current limiting fuses.
- ii. All under oil partial range current limiting fuses shall be easily accessible through a large “hand hole” on the exterior of the transformer. The hand hole shall be large enough and placed in such a location that all internal fusing elements will be “within” the hand hole area. In no case shall the hand hole area be smaller than 10 inches by 12 inches (10” X 12”) unless approved in writing by HCP. The hand hole cover shall be tamper resistant and readily accessible.
- iii. All expulsion fuses shall be under oil in load-break bayonets. The bayonets shall be accessible through the high voltage compartment and there shall be a pressure relief valve in the low voltage compartment.
- iv. The transformer shall be equipped with an under oil partial range current limiting fuse. The bayonet expulsion fuses, and backup current limiting fuses shall be coordinated to ensure that the current limiting fuse will only operate on faults internal to the transformer. The current limiting fuse used shall have an interrupting rating of 50,000 amperes (minimum) symmetrical.

h. CORE AND WINDINGS

- i. All transformers must be wye-wye connected windings and shall have four- or five-legged core construction or shall otherwise include provisions to prevent excessive tank heating. The core construction or other provisions for preventing tank heating shall be adequate for unbalanced loading conditions of one or more of the primary phases of the transformer being energized from the same (single-phase) source.
- ii. One-piece core construction is desired. Where other construction is used, minimum assembly joints shall be provided. For approved two-part cores, the core shall be held together with bands and torqued bolts. Crimped banding is not acceptable for ratings over 50 kVA.
- iii. Copper winding conductors are desired.
- iv. Core material may be either silicon steel or amorphous.
- v. Core losses shall be minimized by the core material and core construction.

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- vi. Transformers shall be equipped with a common H0X0 bushing with a copper grounding strap to the transformer case.

i. INSULATION

- i. All insulating paper used as layer insulation in transformer coils shall be coated on both sides with a thermosetting adhesive and properly cured prior to impregnating with oil, or the coils shall be wound with primary conductor containing a thermosetting adhesive that when properly cured will form an effective bond.
- ii. Insulating/cooling fluid within the tank shall be electrical-grade mineral oil or a less flammable, environmentally accepted fluid where required.
- iii. All fluids shall be certified and indicated on the nameplate to be less than 1 part per million (ppm) polychlorinated biphenyl (PCB) content.
- iv. For fluids other than mineral oil, the quotation shall include complete chemical and electrical characteristics and a statement of being non-PCB.

j. PRESSURE RELIEF DEVICE

- i. Each transformer shall be equipped with a self-actuating relief device to relieve slow pressure buildup and to automatically vent when pressure reaches + 10 PSIG and recloses when pressure falls to +9 PSIG.

k. MOUNTING AND LIFTING

- i. Mounting shall be suitable for concrete pad mounting. Drawing DR-10 Provide suitable anchorage brackets for Seismic Zone 3.
- ii. The tank shall have lifting provisions of adequate strength, size, and arrangement on the transformer to permit lifting the transformer in an upright position when filled with insulating fluid.

l. GROUND CONNECTION

- i. The tank shall have a welded ground lug boss attached on the secondary side of the tank near the bottom of the tank, clear of secondary and attached conductors.
- ii. The grounding boss shall be free of paint and shall be 7/16 inch (7/16") deep and threaded for a one-half (1/2") 13 NC grounding stud or connector.
- iii. The tank cover shall have a grounding strap between the cover and the tank.

m. ACCESSORIES

- i. ANSI standard accessories shall be provided.

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V. FINISH

- a. The transformer shall be given a durable, corrosion resistant, non-chalking, green or desert tan (as specified) outdoor finish capable of meeting or exceeding EEI finishing requirements.

VI. SHIPPING AND IDENTIFICATION

a. SHIPPING

- i. Transformers shall be mounted on a pallet for shipment.

b. IDENTIFICATION

- i. The nameplate shall contain the manufacturer's name, address, kVA, primary voltage, secondary voltage(s), % impedance, rated temperature rise, a wiring diagram indicating connections and voltages with polarity (additive or subtractive), core losses (no load and full load), insulating fluid identification, and PCB content, weight when full, manufacturer's part (catalogue) number, and serial number unique to the transformer.
- ii. The nameplate shall conform to ANSI standards.
- iii. The nameplate shall be mounted on a permanently attached backing plate with welds or rivets. Removable nameplates or nameplates attached to removable parts will not be accepted.

VII. TESTING

- a. All transformers shall be tested in accordance with requirements of ANSI standards. All transformers shall be capable of withstanding short circuit tests.

VIII. LOSS EVALUATION

- a. Total losses will be invoiced at \$4.30 per watt over allowable losses according to the chart below.
- b. Evaluated losses will be calculated by multiplying the appropriate dollar/watt values by guaranteed maximum load losses at maximum nameplate kVA rating and no-load losses at 100 percent voltage. These products will be added to the bid price for evaluation.
- c. Total watt losses shall not exceed the following:

3-PHASE PAD-MOUNT 120/208 VOLT

<u>kVA Rating</u>	<u>Losses in Watts</u>	<u>kVA Rating</u>	<u>Losses in Watts</u>
75 kVA	815 Watts	300 kVA	2,380 Watts
112.5 kVA	1,125 Watts	500 kVA	4,060 Watts
150 kVA	1,300 Watts	750 kVA	6,500 Watts
225 kVA	1,950 Watts	1000 kVA	8,980 Watts

3-PHASE PAD-MOUNT 277/480 VOLT

<u>kVA Rating</u>	<u>Losses in Watts</u>	<u>kVA Rating</u>	<u>Losses in Watts</u>
150 kVA	1,385 Watts	750 kVA	4,500 Watts
225 kVA	2,000 Watts	1,000 kVA	6,500 Watts
300 kVA	2,460 Watts	1,500 kVA	10,500 Watts
500 kVA	4,325 Watts	2,000 kVA	14,000 Watts
		2,500 kVA	22,057 Watts

- d. If the actual tested loss values exceed the guaranteed maximum loss values stated in the proposal of the Successful Bidder, the Successful Bidder (Seller) will be charged a penalty value for every watt by which the actual tested transformer losses exceed the guaranteed maximum losses upon which the proposal was evaluated. This penalty value will be the difference between the total actual test loss evaluation and the total guaranteed bid loss evaluation.
- e. Transformers shall not be energized until all loss evaluation fees have been paid.

IX. VENDOR EVALUATION

- a. Vendor evaluations, as well as loss evaluations, will be used to determine the low bidder. Delivery dates will be of prime concern during the bid evaluation.

X. EXCEPTIONS

- a. Exceptions to this Specification shall not be accepted, unless approved by HCP. Any exceptions shall be noted in the proposal.

XI. WARRANTY

- a. Manufacturer shall warrant to Purchaser that the apparatus or service to be furnished hereunder shall be of the highest quality and free from defects in material, workmanship, and title and will be of the kind designated in the pertinent purchase order. Terms of Manufacturer's warranty shall be included in the bid proposal and will be a criterion for evaluation of the proposal. The developer shall warranty the installed transformer for a period of twelve (12) months after the date of preliminary acceptance.
- b. The Manufacturer shall guarantee that all transformers furnished under this specification are of first-class material and workmanship throughout, that they have been tested in accordance with this specification, and that the

results of the tests comply with the requirements of this specification, and in lieu of other claims against it, agrees to replace or repair:

- i. Any transformer found to be defective in material or workmanship or found not to be in compliance with the requirements of this specification before or during installation of the transformer.
- ii. Any transformer failure during normal and proper use within the Manufacturer's guarantee period which shows defects of materials or workmanship.
- iii. All transformers must be of new construction; no remanufactured transformers will be accepted. New construction means not used and is less than 2 years old.

SECTION 6 – SECONDARY LINE AND METER INSTALLATION

SECONDARY LINE AND METER INSTALLATION GENERAL

I. SCOPE

These standards outline minimum requirements for the service equipment, service conductors, etc., installed from the secondary junction box to and including the meter.

It also includes information necessary to determine ownership maintenance responsibility for associated conductors, equipment, etc.

II. APPLICATION

a. GENERAL

- i. This standard shall be used as a guideline for determining whether or not the service equipment, service conductors, etc. that comprise the secondary service meet all applicable national, state, and local codes and ordinances and HCP requirements.

III. DEFINITIONS

a. SERVICE EQUIPMENT, See Drawings DR-24, DR-25.

- i. All metering equipment, disconnecting equipment, and overcurrent protective devices near or on the building that provide power to the building from the HCP service connection point.

b. UNDERGROUND SERVICE CONDUCTORS

- i. The underground supply conductors that extend from the City's secondary junction box or transformer to the metering provision.

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c. GROUNDING ELECTRODE

- i. Grounding shall be done through a UFER grounding system, or per latest building code requirements.
- ii. As a minimum, a 5/8-inch X 8-foot (5/8" X 8') ground rod shall be used as the grounding electrode. When a metal underground water pipe system is available on the premises, the water pipe system and the ground rod shall be used as grounding electrodes.

d. GROUNDING ELECTRODE CONDUCTOR

- i. The conductors used to connect the grounding electrode to the grounded conductor of the underground service.

e. BURIAL DEPTH

- i. Underground service conductors will be installed in schedule 40 PVC conduit.
- ii. The vertical distance from the surface under which the conduit is installed, to the center of the conduit.

f. METERING PROVISIONS

- i. The enclosures, meter sockets, switch boxes, conduit, conduit elbows, etc. are required to provide a place for mounting a NEMA meter enclosure, required for installation of a meter.

g. SERVICE RISER STANDPIPE

- i. Metallic conduit, PVC conduit elbow, and mounting assemblies extend from the bottom of the service trench to the meter mounting provisions and main disconnecting means. These must enclose the service conductors.

IV. CODES

- a. Underground services shall be installed in accordance with applicable HCP requirements and local, state, and national codes and ordinances.
- b. All equipment and conductors installed shall meet or exceed applicable HCP requirements and local, state, and national codes and ordinances.

V. INSTALLATION

a. TYPE

- i. All underground service conductors shall be Type USE (underground service.)

b. PROTECTION

- i. Underground service conductors shall be protected by installation in conduit (PVC Schedule 40).

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c. BURIAL DEPTHS

- i. The minimum burial depth for conduit-protected underground service conductors shall be 24 inches (24"). See diagram DR-18.

d. SPLICES

- i. Underground service conductors shall not be spliced.

e. INSTALLATION METHODS

All underground service conductors shall be pulled in conduit; care shall be taken to ensure that the conductors are not damaged during the pulling operation. Pulling tensions shall be monitored to ensure proper installation.

f. GROUNDING REQUIREMENTS

- i. A grounding electrode shall be connected via grounding electrode conductor to the underground service conductors (grounded conductors only) on the line side of and/or within the service disconnecting means.

VI. SERVICE EQUIPMENT

a. CONTINUOUS CURRENT RATING

- i. All service equipment shall have a minimum current rating of 100 amperes.

b. SHORT CIRCUIT CURRENT RATING

- i. Service equipment and its overcurrent protective devices shall have short circuit current ratings greater than or equal to the short circuit current available at their supply terminals.

VII. SERVICE DISCONNECT MEANS

- a. All service disconnecting means shall have a current rating of not less than 100 amperes unless otherwise permitted by federal, state, or local authorities.
- b. When multiple switches or circuit breakers are used as the disconnecting means, their combined current rating shall not be less than 100 amperes unless otherwise permitted by federal, state, or local authorities.

VIII. SERVICE CONDUIT

a. GENERAL

- i. Service conduit installations shall be carefully designed (length, number of bends, bend radii, etc.) to ensure that the underground service conductors can be pulled into and through the conduit without damage.

b. TRENCH REQUIREMENTS

i. TRENCH BOTTOM

1. When conduits are direct-buried or concrete encased, the bottom of the trench into which the conduits are placed shall be free from rocks exceeding one inch (1") in their largest dimension. When the trench bottom contains rocks exceeding this size requirement, the trench shall be excavated six inches (6") deeper than the burial depth required for the conduits and then backfilled to the required burial depth with compacted sand or clean backfill.

ii. TRENCH BACKFILL

1. The JUT (Joint Utility Trench) trench shall be backfilled with 1-inch-minus material from the bottom of the trench to the top. No spoil material shall be used unless it is screened, 1-inch-minus, and machine compactable.
2. At least twelve inches (12") of compacted sand or screened backfill shall be placed over the conduits.

IX. METERING PROVISIONS

a. GENERAL

- i. Typical requirements for meter mounting provisions for all applications are shown on Drawings DR-23, DR-24, and DR-25. When meter mounting provisions different from those shown are required, HCP shall detail specific metering provision requirements.
- ii. The meter mounting provisions must be installed in a true vertical plane.
- iii. Meter mounting provisions with extruded or cast aluminum meter jaws shall not be used.
- iv. Remote metering will not be allowed for new construction or rebuild/add-on construction jobs.
- v. The meter main will provide a disconnect. All three-phase meters and single-phase 400 amp meter sockets shall contain a lever bypass.
- vi. All external exposed standoff conduit must be aluminum or rigid steel wrapped with anticorrosion tape where buried.

b. LOCATION

- i. Meters shall not be located in carports, breezeways, covered or screened porches, or other areas that might be enclosed at some future date.

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- ii. The area on either side of a door or swinging window equal to the width of the door or swinging window is unacceptable as a meter location.
- iii. A level standing and working surface of 48 inches x 48 inches (48" x 48") shall be provided in front of all meters. Meters shall not be located behind fenced areas.
- iv. Meters shall be set at a height of five feet six inches to six feet six inches (5'6" to 6'6").
- v. Meters shall be installed on the front of the structure (side of building facing the street) or within the first ten feet (10') of the front of the structure closest to the power source.
- vi. Meters must be accessible to the City Meter Reader and shall not be hindered by animals, landscape, fences, etc.
- vii. If existing meters are not to current standards, no upgrades will be allowed until the meter is brought into accordance with current standards.

X. CONDUCTOR SIZE AND OWNERSHIP

- a. Service conductors are owned and maintained by Customer.
- b. The underground service conductors shall have adequate ampacity to supply the load requirements of the premises served by the conductors. See the table below for quantities and conductor sizes required.

Table 4
CONDUCTOR QUANTITY & SIZE

Service Size (A)	Quantity	Size
Residential		
200	1	4/0 AWG
400	1	350 kcmil
Commercial/Industrial		
200	1	350kcmil
400	2	350kcmil
600	2	500kcmil
800	3	500kcmil
1000	4	350kcmil
1200	4	500kcmil
1600	5	500kcmil
2000	6	500kcmil

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Note: For residential service sizes larger than 400A and commercial/industrial service sizes larger than 2000A coordinate with HCP to determine adequate secondary conductor quantities and size.

XI. SECONDARY DISTANCES

- a. For residential installations the maximum allowable distance from the transformer or secondary box to the service equipment shall be 150'.
- b. For commercial/industrial installations it is recommended that the distance from the transformer to the service equipment allow for no more than a 1% voltage drop with the conductor size outlined in table 5. This is to maintain the maximum 5% voltage drop across the feeders and branch circuits specified in IECC C405.9.

SECONDARY LINE AND METER INSTALLATION FOR RESIDENTIAL SUBDIVISIONS

I. METERING PROVISIONS

a. GENERAL

- i. Typical requirements for meter mounting provisions for residential subdivisions are shown on Drawing DR-24. When meter mounting provisions different from those shown are required, HCP shall detail specific metering provision requirements.
- ii. Only one service meter shall be allowed per lot. Accessory dwelling units, shops, or other detached structures shall not be separately metered.

SECONDARY LINE AND METER INSTALLATION FOR MOBILE HOME AND TRAILER PARKS

I. SERVICE EQUIPMENT

- a. Equipment containing the disconnecting means, overcurrent protective devices, and receptacle or other means for connection of a mobile home feeder assembly. This equipment shall be located adjacent to and not mounted in or on the mobile home.

II. FEEDER ASSEMBLY

- a. The underground feeder conductors, including the grounding conductor, together with the necessary fittings and equipment or a power supply cord designed to connect a mobile home to its metering provisions.
- b. Conductors connect the service equipment to the distribution panel inside the mobile home.

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- c. As a minimum, a 5/8-inch x 8-foot (5/8" X 8') ground rod shall be used as the grounding electrode. When a metal underground water pipe system is available, the water pipes and the ground rod shall be used as the grounding electrode.

III. INSTALLATION

a. FEEDER ASSEMBLY

- i. All conductors in the feeder assembly shall be insulated, color-coded, and installed without splices.

b. GROUNDING

- i. The neutral conductor and the grounding conductor shall be bonded together only at the service equipment, not on or within the mobile home.

c. PROTECTIVE EQUIPMENT SIZING

- i. The service equipment shall contain a properly rated fused disconnect switch or a circuit breaker corresponding to the load requirements of the mobile home.

IV. METERING PROVISIONS

a. INDIVIDUAL METERS

- i. Typical requirements for meter mounting provisions for mobile homes and trailers with individual meters are shown on Drawing DR-25. When meter mounting provisions differ from those shown are required, specific meter mounting provision requirements shall be detailed by HCP.

b. SINGLE METER

- i. When mobile home parks or trailer courts are metered at a single point, the metering provisions at that point shall be detailed by HCP.

c. GENERAL REQUIREMENTS

- i. Mobile home meter pedestals shall be constructed and installed so that the vertical distance from the ground level to the centerline of the meter is 30 inches (30") minimum to 42 inches (42") maximum.
- ii. Meters shall not be installed on power poles.
- iii. New mobile home meter pedestals shall be of the underground type.
- iv. The meter shall have a working clearance of 3 feet (3') around the entire meter.

SECONDARY LINE AND METER INSTALLATION FOR APARTMENTS AND CONDOMINIUMS

I. METERING PROVISIONS

a. GENERAL

- i. Typical requirements for meter mounting provisions for apartment and condominium subdivisions are shown on Drawings DR-27. When meter mounting provisions differ from those shown are required, HCP shall detail specific meter mounting provision requirements.
- ii. The meter main will provide a disconnect. All 3 phase meter sockets shall contain a bypass lever. All 400-amp meter sockets shall contain a lever bypass.
- iii. All meter sockets shall be clearly labeled with permanent placards or permanent metallic stickers. See drawing DR-27.

b. MOUNTING HEIGHTS

i. SINGLE HORIZONTAL ROW OF METERS

1. When meters for an apartment or condominium can be mounted in a single horizontal row, the vertical distance from the ground level to the center line of meters shall be five feet six inches (5'6") minimum to six feet six inches (6'6") maximum.

ii. MULTIPLE ROWS OF METERS

1. When meters for an apartment or condominium can be mounted in two (2) or more horizontal rows, the vertical distance from the ground level to the center line of the top row of meters shall be six feet six inches (6'6") maximum and the distance from the ground level to the center line of the bottom row of meters shall be four feet zero inches (4'0") minimum.

c. LABELING METER BASES

- i. Meter bases shall be numbered according to the apartment/condominium numbers as recorded on the official plat.
- ii. One inch (1") wide placards or metallic stickers shall be used to identify what the meter/unit disconnect breaker is feeding.
- iii. Labels shall contain the unit number and/or address to correlate what each meter/unit disconnect breaker is feeding. For example: Unit 1, Unit 2, or 299 N 2600 W, 287 N 2600 W.
- iv. Labels shall be installed to the right or directly beneath the unit disconnect breaker to which the correlating meter is feeding.

- v. Placards shall be installed using self-tapping screws and shall be lubricated using a rust resistive compound.
- vi. No letters shall be used to identify meters/unit disconnect breakers. For example: Unit A, Unit B, Unit C are not permitted.

SECONDARY LINE AND METER INSTALLATION FOR COMMERCIAL FACILITIES

I. SERVICE DISCONNECTING MEANS

- a. Single-phase or three-phase commercial services will be required to have a lockable fuse or knife disconnect located on the building to disconnect power from the building. The disconnect must be situated in a manner as to leave the meter energized when the disconnect is turned off.

II. METERING PROVISIONS

a. GENERAL

- i. Typical requirements for meter mounting provisions for commercial subdivisions are shown on Drawings DR-23. When meter mounting provisions differ from those shown are required, HCP shall detail specific metering provision requirements.
 - 1. All services over 400 amps will be CT metered. Hurricane Power will provide and install the metering equipment and will charge the development cost of the materials.
 - 2. Building layout, square footage, panel size in amps, number of meters/breaker sizes, voltage needed, and load calculations will be required before HCP can determine the sizing of all metering provisions.

ii. MOUNTING HEIGHTS

1. SINGLE HORIZONTAL ROW OF METERS

- a. When a meter for a commercial facility can be mounted in a single horizontal row, the vertical distance from the ground level to the center line of the meters shall be five feet six inches (5'6") minimum to six feet six inches (6'6") maximum.

2. MULTIPLE ROWS OF METERS

- a. When meters for a commercial facility can be mounted in two (2) or more horizontal rows, the vertical distance from the ground level to the center line of the top row of meters shall be six feet six inches (6'6") maximum and the distance from the ground level to the center line of

the bottom row of meters shall be four feet zero inches (4'0") minimum.

iii. LABELING METER BASES

1. Meter bases shall be numbered according to the commercial building numbers as recorded on the official plat.
2. One inch (1") wide placards or metallic stickers shall be used to identify what the meter/unit disconnect breaker is feeding.
3. Labels shall contain the unit number and/or address to correlate what each meter/unit disconnect breaker is feeding. For example: Unit 1, Unit 2, or 299 N 2600 W, 287 N 2600 W.
4. Labels shall be installed to the right or directly beneath the unit disconnect breaker to which the correlating meter is feeding.
5. Placards shall be installed using self-tapping screws and shall be lubricated using a rust resistive compound.
6. No letters shall be used to identify meters/unit disconnect breakers. For example: Unit A, Unit B, Unit C are not permitted.

SECTION 7 – STREET LIGHT INSTALLATION

I. SCOPE

This standard outlines the requirements for installing streetlights erected in any subdivision within Hurricane City Limits.

II. EQUIPMENT SPECIFICATIONS/INSTALLATION

- a. POLICY: It is the policy of the City of Hurricane that all streetlights erected in the City shall adhere to the following standard.
- b. PURPOSE AND OBJECTIVE: To ensure streetlights are installed according to uniform construction guidelines and equipment specifications.
- c. STREET LIGHT POLE SPACING AND HEIGHT:
 - i. Pole Height 15' 200' – 250'
 - ii. Pole Height 25' 225' – 300'
 - iii. A streetlight shall be placed at each intersection.
 - iv. All poles shall be anchor base poles and the foundation design shall be adequate for the height of pole, the arm that is being installed, the soil conditions and 80-mile-per-hour winds.
 - v. Luminaires shall be 120 volts.
 - vi. All streetlight bases must be precast and supplied by a preapproved vendor.

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- vii. For current acceptable streetlight makes and models, see HCP personnel.

Note: All poles, post-top heads, and cobra-style heads are black.

III. INSTALLATION OF STREET LIGHT

a. INSTALLATION

- i. Customers requesting to add or delete streetlights will be required to meet with the HCP staff during a regularly scheduled planning meeting to discuss details and procedures.
- ii. If the City Council or Hurricane City Power Board determines a streetlight should be installed at City expense for safety or other reasonable public consideration, HCP will install the streetlight(s) as directed and according to this policy.

IV. OWNERSHIP

- a. Streetlights shall be installed at owner/developer expense in new/proposed subdivisions and projects. The owner shall warrant the lights for one year, then Hurricane City accepts ownership.

V. FOOTING SPECIFICATION

- a. Per manufacturer, see Drawings DR-4 and DR-5. These drawings are for 15' decorative and 25' mongoose light only.

SECTION 8 – SPECIFICATIONS

CONCENTRIC NEUTRAL URD PRIMARY CABLE

I. SCOPE

All primary cables used on the Hurricane City electrical system shall comply with the following:

II. SPECIFICATIONS

- a. Insulation Type – EPR
- b. Insulation Thickness:
 - i. Minimum average thickness -220 mils.
 - ii. Minimum thickness at any point – 209 mils
- c. Voltage Class – 15 kV
- d. All cable produced under this specification shall comply with the latest editions of AEIC C56 and ICEA S-68-516
- e. All cable installed shall be new (not used) and within 2 years of date of manufacture.

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- f. All cables installed in the same conduit must be of the same manufacturer and type.
- g. Conductor sizes are:
 - i. 1/0 AWG aluminum compressed stranded with 16-#14 AWG bare copper concentric neutral wires (full neutral) with an encapsulating jacket whose thickness is not less than 0.05 inches (0.05").
 - 1. Jacket material shall be LLDPE or approved equal and shall be insulating.
 - 2. Single-phase 1/0 AWG underground cable shall be installed in two and one-half inch (2 ½") conduit and three-phase 1/0 AWG underground cable shall be installed in four-inch (4") conduit, unless otherwise approved by HCP.
 - ii. 4/0 AWG aluminum compressed stranded with 18-#14 AWG bare copper concentric neutral wires (1/3 neutral) with an encapsulating jacket whose thickness is not less than 0.05 inches (0.05").
 - 1. Jacket material shall be LLDPE or approved equal and shall be insulating.
 - 2. 4/0 AWG underground cable shall be installed in four-inch (4") conduit, unless otherwise approved by HCP.
 - iii. 750kcmil aluminum compressed stranded with 24-#12 AWG bare copper concentric neutral wires (1/3 neutral) with an encapsulating jacket whose thickness is not less than 0.08 inches (0.08").
 - 1. Jacket material shall be LLDPE or approved equal and shall be insulating.
 - 2. 750kcmil underground cable shall be installed in six-inch (6") conduit, unless otherwise approved by HCP.
 - iv. Approved cable manufacturers are:
 - 1. Okonite
 - 2. Kerite
 - v. Initialisms
 - 1. AEIC is Association of Edison Illuminating Companies
 - 2. AWG is American Wire Gauge
 - 3. ICEA is Insulated Cable Engineers Association (formerly ICPEA)
 - 4. EPR is Ethylene Propylene Rubber
 - 5. LLDPE is Linear Low-Density Polyethylene

THREE-PHASE AND SINGLE-PHASE ABOVE GROUND PRIMARY VAULT

I. SPECIFICATIONS

- a. Units must meet the following specification: See Drawings DR-15, DR-17.
 - i. HCP approved
 - ii. Penta Head bolts on lid with locking capabilities
 - iii. Fiberglass
 - iv. All hardware including hinges to be stainless steel
 - v. Color – Munsell Green, Willow Green, or Desert Tan
 - vi. Four-Way Junctions required
- b. Approved vendors
 - i. Nordic
 - ii. Other vendors of equivalent equipment are acceptable if approved by HCP.
- c. Vaults will include:
 - i. Three-phase
 - 1. Three (3) four-way junctions, standoff brackets, and necessary receptacles, etc.
 - ii. Single-phase
 - 1. One (1) four-way junction, standoff bracket, and necessary receptacles, etc.

METAL ENCLOSED SWITCH GEAR

I. SPECIFICATION

- a. HCP shall determine the switchgear class needed for each job. The switchgear specifications are a model P.M.H. 600 Amp Main Bus capacity. These will be designed per individual needs.
- b. Approved Manufacturers
 - i. A.B. Chance
 - ii. S&C
 - iii. Federal Pacific.

Outdoor-Style, Manual Operation is as follows:

kV, Normal	14.4
kV, Maximum.....	17.0
kV, BIL.....	95
Main Buss Continuous, Amperes	600/200

Three-Pole Interrupter Switches

Continuous, Amperes (Source/Feeder)	600/200
---	---------

- | | |
|--|---------|
| Live Switching, Amperes (Source/Feeder)..... | 600/200 |
| <u>Two-Time Duty-Cycle Fault-Closing</u> | |
| Amperes RMS Asymmetrical | 23,400 |
| <u>Fuses with Integral Load Interrupter</u> | |
| Maximum, Amperes..... | 200E |
| Live Switching, Amperes | 200 |
| <u>Two-Time Duty-Cycle Fault-Closing</u> | |
| Capacity, Amperes RMS Symmetrical | 12,500 |
| <u>Short-Circuit Ratings</u> | |
| Amperes, RMS Symmetrical | 12,500 |
| MVA Three-Phase Symmetrical at Rated Nominal Voltage ... | 310 |
- c. The momentary and two-time duty-cycle fault-closing ratings of switches, momentary rating of bus, interrupting ratings of fuses, and one-time duty-cycle fault-closing capabilities of the fuses with integral load interrupters shall equal or exceed the short circuit ratings of the pad-mounted gear.
 - d. The pad-mounted gear shall consist of a single self-supporting enclosure, containing single blade interrupter switches, non-key interlock, dual purpose barriers for the switches and fuses (G1 & G2), component grounding studs for switches and fuses (H & J).
 - e. The switches and fuse components shall be arranged for full visibility when the enclosure doors are open. Open switch gaps and blown-fuse indicators shall be readily visible to provide for ease of operation.
 - f. Interrupter switches shall have a two-time duty-cycle fault-closing rating equal to or exceeding the short-circuit rating of the integrated pad-mounted gear assembly. This rating defines the ability to close the interrupter switch twice against a three-phase fault with asymmetrical current in at least one phase equal to the rated value, with the switch remaining operable and able to carry and interrupt rated current. Tests substantiating this rating shall be performed at maximum design voltage with current applied for at least ten (10) cycles. Certified test abstracts establishing this rating shall be furnished upon request.
 - g. Interrupter switches shall have the capability established by test to perform switching duties which include interrupting load current up through the assigned live-switching rating, as well as transformer magnetizing currents associated with the applicable loads, cable-charging current, and line-charging current typical for distribution systems of the applicable voltage ratings. All arcs accompanying the interruption shall be contained within the

interrupters and products/gases evolved during interruption shall be vented through exhaust-control chambers to eliminate discharge of ionized gases. Switches shall have a single blade per phase and shall be externally operable. A quick-make/quick-break mechanism, non-defeatable under normal operation and shall make operation of the switch blades independent of the speed of the manual operating handle.

- h. Solid-material power fuses shall be capable of detecting and interrupting all faults up to the short-circuit interrupting rating of the integrated pad-mounted gear assembly. Fusible elements shall be non-aging and non-damageable. All arcing accompanying power fuse operation shall be contained within the fuse and all arc products and gases evolved shall be effectively contained within exhaust control devices during fuse operation. Power fuses shall have a blown-fuse indicator that shall be readily visible without removing the fuse from the mounting location. Fuse type shall be S&C Type SMU-20 for system compatibility.
- i. Fuse mounting jaw contacts shall be equipped with integral load interrupters to permit live switching of fuses with a rated hot stick. Integral load interrupters shall have an on-time duty-cycle fault-closing capability equal to the short-circuit rating of the pad-mounted gear. The duty-cycle capability defines the level of available fault current into which the fuse can be closed without a quick-make mechanism and when operated vigorously through its full travel without hesitation at any point, with the integral load interrupter remaining operable and able to carry and interrupt currents up to the emergency peak-load capabilities of the fuse.
- j. All terminations shall be done with HCP approved termination kits and two-hole termination lugs, with the contractor supplying the equipment.

HURRICANE CITY POLE ATTACHMENT STANDARDS AND SPECIFICATIONS



POWER
HURRICANE CITY
UTAH

DESIGN AND INSTALLATION OF POLE ATTACHMENTS

BOOK NO. _____

**ADOPTED BY HURRICANE CITY COUNCIL
MAY XX, 2026**

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SECTION 1 – COMMUNICATION POLE ATTACHMENTS

I. GENERAL PREFACE

Hurricane City has adopted these Standards and Specifications to establish minimum requirements for the design, installation, operation, and maintenance of communication facilities attached to City-owned joint utility poles. These standards are required to be used by all persons engaged in the design, installation, maintenance, or operation of overhead communications systems within Hurricane City limits. These standards establish minimum requirements. Compliance with these standards does not relieve the permit holder from complying with applicable federal, state, or local laws, codes, or regulations. Where these Standards conflict with applicable federal, state, or local laws, codes, or regulations, the more restrictive requirement shall govern.

If a Contractor needs to have Hurricane City Power, which may be referred to as HCP throughout this document, provide access to electrical facilities, they are required to set up an appointment to have HCP meet them at the job site.

All costs for overhead communications systems are the responsibility of the service provider unless otherwise stated in these Standards and Specifications.

In consultation with the Hurricane City Power Board, HCP may make minor adjustments to these standards at any time to address unique or unusual circumstances or to align with updated industry standards. HCP shall submit a report to the Hurricane City Council detailing all changes to these standards.

SECTION 2 – ACQUIRING NEW ATTACHMENTS

I. FRANCHISE AGREEMENT

- A. All communication providers will be required to sign a new franchise agreement with HCP before they are able to request a new pole attachment.

II. APPLICATION

- A. An application for new pole attachments must be submitted to HCP and approved before any new attachments are made. A \$100.00 review fee must be paid before the application is reviewed.

III. TRANSMISSION POLES

- A. Attachments will no longer be allowed on transmission poles. All existing attachments on transmission poles may remain. All new attachments must be

made on distribution poles. The only exception shall be that existing copper cables on transmission poles may be replaced with smaller, lighter fiber cables.

IV. EXISTING ATTACHMENTS

- A. All existing pole attachments by the applicant must be brought up to the standards in this document before any new applications are approved.

V. ENGINEERING REQUIREMENTS

- A. HCP may require engineering design for new attachments. When necessary, HCP will approve the engineering company, and all expenses will be paid by the applicant.

VI. POLE UPGRADES

- A. In the event that a joint utility pole is required to be upgraded to facilitate a requested pole attachment the applicant shall bear all costs associated with replacing or upgrading the joint utility pole.

SECTION 3 - COMMUNICATION RISERS

I. SCOPE

- A. The following section defines the construction, mounting, and installation of communication risers on joint utility poles.

II. CONSTRUCTION

- A. All risers shall transition from schedule 40 PVC below grade to aluminum conduit above grade with an appropriate transition coupling.
- B. PVC or fiberglass conduit shall not be attached directly to a joint utility pole.

III. MOUNTING

- A. All risers shall be clamped to a stand-off bracket. If a stand-off bracket has not been installed on a joint utility pole the communication provider shall install a 12" Aluma-Form bracket or approved equivalent at their expense.
- B. A bracket shall be installed within 6 inches of the top of the conduit.
- C. No bracket shall be installed lower than 8 feet above grade.
- D. Brackets shall not be more than 10 feet apart and shall be evenly spaced.
- E. The entire length of the communication riser shall be parallel to the joint utility pole.

- F. No more than three communication risers shall be installed on any joint utility pole unless specifically approved by HCP.
- G. All communication risers shall be separated by at least 2 inches.
- H. Stand-off bracket shall be installed perpendicular to the roadway. This is to ensure that a climbing space is maintained across the length of the joint utility pole.

SECTION 4 - CABLE ATTACHMENT METHODS

I. SCOPE

- A. This section describes the method that HCP requires all communication cables are to be attached to both wood and metal joint utility poles. It will also discuss the required sag and down guy requirements.

II. MESSENGER STRAND ATTACHMENT

Where required a messenger cable shall be installed to prevent excessive sagging and reduce the stress on the communication cable.

A. Wood/Metal Pole

- 1. Messenger strands shall be installed using a through-bolt and an approved messenger suspension clamp.
- 2. All drilled holes shall be on roadside of the pole.
- 3. All drilled holes for communication attachments shall be separated by 18 inches vertically.

III. CABLE LASHING

- A. Communication cables shall be lashed to the messenger cable by using appropriate lashing equipment. Lashing cable shall be terminated and secured at the pole using a lashing clamp to ensure the wire remains tight and prevent loosening of the communication cable during normal service conditions.

IV. CABLE SAG

- A. Communication cables shall be tensioned so that there is a uniform sag between all the communication cables. The provider shall determine the proper cable tension based on span length, loading, conductor type, and applicable manufacturer recommendations.
- B. No cable shall be allowed to sag such that the lowest point is less than 15.5-feet in a roadway or 9.5-feet in a pedestrian walk area.

V. SERVICE LOOP

- A. HCP does not allow communication service loops to be installed on any joint utility poles.

VI. GROUNDING

- A. All communication cables shall use the #6 bare copper grounding wire on the joint utility pole as stated in NESC rule 92C and 97G. If a grounding wire is not present on a pole the communication provider shall immediately notify HCP. Upon approval, the communication provider shall install a ground rod and attach a #6 bare copper wire to the ground rod.

VII. DOWN GUYS

- A. When necessary, it is the responsibility of the communication provider to design and install all down guy wires to support any additional loading on the joint utility pole. The communication attachments shall not alter the position of the pole or the sag of the power conductors.
- B. All down guy attachments must be approved by HCP prior to installation.
- C. Down guys shall be insulated in accordance with NESC 279A1.

VIII. INSPECTION

- A. HCP will be notified when a new cable has been installed to schedule an inspection to verify the cable meets the standards in this document. Any required corrections will need to be made before the cable is put in service.

SECTION 5 – TAGGING

I. SCOPE

- A. At the time of installation all communication cables shall be tagged at each joint utility pole. This will be done so that the appropriate company may be contacted in the event of an emergency, cable break, or inappropriate installation.

II. MARKING

- A. Every cable shall have an aerial cable marker installed near the connection point at each joint utility pole. Tags shall be UV-resistant, weather-resistant, and permanently legible. The aerial cable marker shall have the following information clearly identified.
 - Name of the communication company that owns the cable.

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- Type of cable (telephone, fiber optic, etc.)
 - Phone number for emergency response personnel.
 - Date of installation.
 - Tags shall be installed such that the name of the company can be clearly read from the ground.
- B. Cables that have already been installed should have a label installed within one (1) year of the signing date of new pole attachment agreement.

III. ATTACHMENT

- A. All tags shall fully wrap around the cable to avoid falling off due to high wind speeds.

SECTION 6 - CLEARANCES

I. SCOPE

- A. This section defines the various spaces of a joint utility pole and details the clearance requirements of all insulated communication conductors, messengers, overhead surge protection wires, guys, and neutral conductors.

II. DEFINITIONS

- A. **SUPPLY SPACE:** The uppermost section of a utility pole that is reserved for all conductors, transformers, etc. that are responsible for the distribution and transmission of electric energy. Note only authorized and qualified contractors are permitted in the space due to high-voltage hazards.
- B. **COMMUNICATION WORKER SAFETY ZONE:** The space between the supply space and communication space. This shall not be less than 48 inches and is measured from the lowest equipment in the supply space and the highest communication cable. This space is to act as a safety buffer from the high voltage hazards of the supply space.
- C. **COMMUNICATION SPACE:** The lowest space on a utility pole is reserved for communication cables. This space is from the bottom of the communication worker safety zone and the minimum ground clearance. See road clearance or pedestrian clearance sections for additional information.

III. COMMUNICATION CABLE SEPARATION

- A. All communication cables shall be separated by no less than 1-foot per NESC Rule 235H1.

IV. STREET LIGHT CLEARANCE

- A. All communication cables shall be separated by no less than 1 foot of any streetlight drip loops. This requirement does not supersede the 48-inch minimum communication worker safety zone.

V. STRUCTURE CLEARANCE

- A. No communication cables shall be attached to a service mast per NEC 230.28.
- B. The 48-inch communication worker safety zone shall be maintained at the joint utility pole. The communication service drop shall maintain a 1-foot minimum separation from the supply service drop to the structure.

VI. ROAD CLEARANCE

- A. For all insulated communication conductors, messengers, overhead surge protection wires, guys, and neutral conductors that spans over a road, street, or any other area that is subject to truck traffic a minimum ground clearance shall not be less than 15.5 feet.

VII. PEDESTRIAN CLEARANCE

- A. For all insulated communication conductors, messengers, overhead surge protection wires, guys, and neutral conductors that span over spaces and ways subject to pedestrian traffic a minimum ground clearance shall not be less than 9.5 feet.

VIII. CLIMBING SPACE

- A. All poles shall follow the guidelines outlined in NESC rule 236 to remain climbable.

SECTION 7 – MAINTENANCE

I. SCOPE

- A. This section describes the required maintenance of all communication cables on joint utility poles. If HCP determines that these standards have not been met, HCP will contact the cable provider. The provider will have 90 days from the notification date to amend the discrepancies. If corrective action has not been completed within ninety (90) calendar days, HCP may remove the noncompliant facilities at the owner's expense.

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II. AVAILABILITY

- A. As part of signing the franchise agreement every provider will need to have a local contact for HCP. This contact information will need to be updated if any changes take place.
- B. The local contact will be required to attend JUC.

III. EMERGENCY RESPONSE

- A. In the event of an emergency HCP will coordinate with the local contact provided. This contact will respond to the incident within one (1) hour and coordinate all necessary repairs.

IV. REMOVAL OF ABANDONED INFRASTRUCTURE

- A. When an aerial cable has been abandoned that cable is to be removed completely from the joint utility pole. Existing abandoned cables shall not be reused to support new communication cables.

V. STANDARDS DISCREPANCY

- A. If HCP determines that a provider has failed to comply with these Standards after written notice and expiration of the correction period, HCP may remove the noncompliant facilities at the owner's expense.



UTAH ASSOCIATED MUNICIPAL POWER SYSTEMS

June 2026

Project Meeting Overview Report

CARBON FREE POWER PROJECT (CFPP)

1. **Approved resolution regarding the use of the Wells Fargo Line of Credit to satisfy the terms of the Bank of America Line of Credit, and related matters.**
2. Discussed project update including DOE engagement, current status of the project and ongoing agreements.

FIRM POWER SUPPLY PROJECT

1. Discussed in Executive Session:
 - a. Steel Project Batteries including options, benefits of BESS Project and next steps.
2. **Approved the formation of a Joint Steel 1A & Steel 1B Solar Battery Study Project, within the discussed parameters, including not to exceed \$16/kW-month, as recommended.**
3. Discussed the Operations Report including output and scheduling from each resource for the month of May.

GOVERNMENT AND PUBLIC AFFAIRS PROJECT (GPA)

1. Discussed Federal & State Legislation including Executive Branch and Congressional Updates:
 - a. Executive update including FCC on small cell issue and spectrum concerns that may impact UAMPS members who utilize specific spectrum for their AMI and SCADA Systems.
 - b. Congressional update including appropriations, SAVE America Act, permitting reform and the Fix Our Forests Act (FOFA).



- c. 2026 Election update including generic ballot and Utah federal races.
- d. State update including Governor Cox Energy Advisory Council convening meetings to discuss energy development opportunities and challenges in Utah.
- e. Utah Public Power PAC details including UPP Giving criteria.
- f. 2026 Primary and General Elections including steps for each, timelines and UAMPS strategy.
- g. Utah Interim meetings including the multiple committees, upcoming meetings and issues.
- h. Overview of UAMPS' third-party collaboration partnerships.

HORSE BUTTE PROJECT (HBW)

- 1. Discussed Plant Operations including monthly statistics and a summary of work completed & still in progress.
- 2. Discussed the Operations Report including production output for the month of May.

HUNTER PROJECT

- 1. **Approved resolution to authorize and delegate authority to the Project Management Committee of the Hunter Power Project to approve Coal Pile Funding, a Line of Credit, Reserve Replenishment, and related matters, with the additional language change added by bond counsel as discussed, and moving forward with Scenario C, as recommended.**
- 2. Discussed the Operations Report including plant scheduled output for the month of May.

MILLARD COUNTY PROJECT

- 1. Discussed in Executive Session:
 - a. Project update including details, long lead materials and next steps.



NEBO PROJECT

1. **Ratified approval of accruing \$300,000 from the FY2026 year-to-date operating surplus to fund the anticipated FY2027 expenses associated with the purchase, installation and related costs of the recommended new water treatment analyzers and steam turbine offline protection system, as recommended.**
2. Discussed plant operations including May statistics, regulatory actions, trainings, other maintenance items and turbine repair update.
3. Discussed the Operations Report for the month of May including Nebo energy breakdown and Nebo sales margins.

POOL PROJECT

1. **Approved resolution approving and ratifying substantially final forms of the Power Sales Contract and the Power Purchase Agreement for the Main Street Energy Prepayment Transaction, and related matters.**
2. Discussed PacifiCorp Transmission Rate update including formula rate process, CY2025 true-up, 2025/2026 Rate Analysis, wildfire loss reduction, FY2027 transmission billing changes with member impacts, FY2027 Transmission Budget Amendment #3 and staff recommendation.
3. **Approved Budget Amendment #3 to incorporate the projected FY2027 transmission budget increase resulting from PacifiCorp's 2026 transmission rate adjustment.**
4. **Approved the application of the PacifiCorp CY2025 Transmission True-Up against the FY2026 UAMPS Transmission Surplus.**
5. **Approved resolution delegating authority to the Pool Project Management Committee to approve an Interim Annual Purchase Plan.**
6. Discussed EDAM including billing, settlements & charge code breakdowns, decision point from EDAM Billing Implementation memo, format of May 2026 Power Bills and resolution delegating authority to approve an interim Annual Purchase Plan.
7. Discussed the PX & Scheduling Report including system peak times for day of the month, hour of the day, day of the week and max daily temperature.
8. Discussed forecast including UAMPS' total forecasted load compared to resources for the fiscal year 2027.
9. Discussed Advisory Committee including meeting updates.
10. Discussed the Operations Report for the month of May including load peak and energy.



POWER COUNTY PROJECT

1. Discussed in Executive Session:
 - a. Project update including partnerships, design work, transmission and next steps.

RESOURCE PROJECT

1. Guest Speaker:
 - a. Keegan Moyer with Energy Strategies discussed the High West Benefit Study including an executive summary, benefit study methods & detailed results, technical appendix and a project overview.
2. Discussed overview of new projects including Wolverine Wind, details on the Tooele Valley/Wasatch Capacity Study memo and potential BESS Projects.
3. Discussed UAMPS' Smart Energy Program including last year's kWh savings per program offered to members, potential new programs to incorporate and next steps.

SPECIAL MEMBER MEETING

1. **Elected Project Director for CRSP.**

BOARD OF DIRECTORS MEETING

1. **Approved resolution authorizing the increase and extension of the line of credit agreement between Wells Fargo and UAMPS, and related matters.**
2. **Approved PAC Transmission Rate Update & Budget Amendment #3, as presented.**
3. Discussed UAMPS FY27 Strategic Initiatives including board feedback, strategic themes, current projects, direction & prioritization and board guidance & approval process.
4. **Approved UAMPS FY27 Strategic Initiatives, as discussed.**
5. Discussed Fraud Risk Questionnaire including background information, recommended measures and fraud risk assessment.
6. Discussed Wildfire Season including Watch Duty App for real-time wildfire intelligence:
 - a. Link to the Watch Duty website and app: <https://app.watchduty.org/>



7. Discussed UAMPS' File Portal including a login tutorial and walkthrough of the site:
 - a. Link to UAMPS website for the File Portal: <https://uamps.com/member-access>
8. Approved all action items for the Project Meetings.

