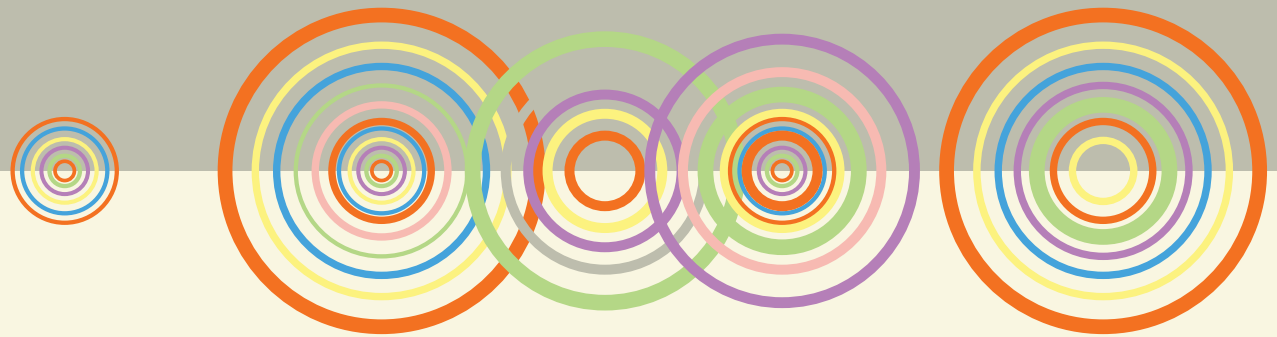
INTEGRATED DISTRIBUTION PLAN (IDP) UPDATE

June 2025



Brad Underwood

Vice President and Chief Financial Officer

OPPD

Omaha Public Power District

AGENDA

1. Reminder of IDP Purpose
2. IDP Phased Development Approach
3. IDP Phase 1 Summary
4. IDP Phase 2 Workstreams
5. Key Takeaways & Next Steps

IDP PURPOSE

GRID EVOLUTION REQUIRES MORE INTEGRATED PLANNING

OPPD's distribution infrastructure will need modernization to meet customers' evolving needs

Traditional Power System

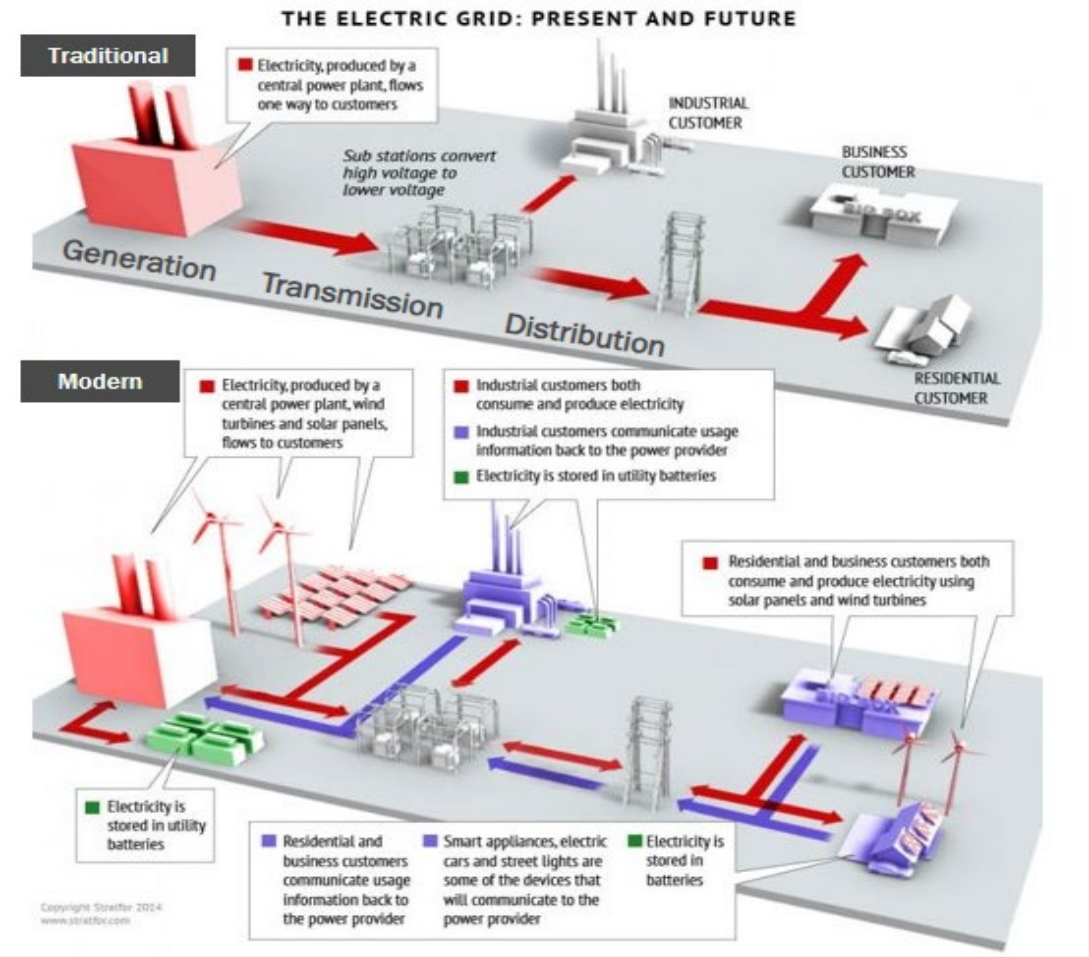
- **One-way power flow**
- **Separate systems with limited integration**
- **Recent focus on Bulk Generation & Transmission Planning integration**

Integrated System Planning

- **OPPD's Systems Transformation Business Unit**
- **Improve grid design practices to incorporate new technologies and meet customers' evolving needs**
- **Launch of IDP that will eventually align with Integrated Resource Plan (IRP) to become an Integrated System Plan (ISP)**

Modern Power System

- **Two-way power flows and communication**
- **Evolving grid and customer technology**
- **Integrated systems**



OPPD INTEGRATED DISTRIBUTION PLAN PURPOSE

IDP VALUE PROPOSITION

This Integrated Distribution Plan (IDP) will describe **OPPD's existing and evolving electric infrastructure planning approach toward modernizing the distribution system** and its operations to meet customers' and community needs in alignment with Powering the Future (PF) to 2050 and Strategic Directive 9 – Integrated Systems Planning. It will lay out OPPD's plans and **align and integrate numerous OPPD teams** on changes to methods, technologies, and expectations across the organization and through infrastructure build and maintenance lifecycles.

1 Problem Statement

Growing Distributed Energy Resource (DER) adoption and electrification such as electric vehicles (EV) and a wealth of data and opportunities that will be created by Advanced Metering Infrastructure (AMI) and modernized grid devices such as Distribution Automation (DA) are driving the need to evolve traditional distribution planning priorities, objectives, and approaches.

2 Background

Transformations such as AMI, grid device modernization, electrification and DER adoption necessitate OPPD to **develop a comprehensive plan for the future of the distribution grid** and how we will orient the organization to that reality.

3 Goals

Figure 1 : IDP Objectives and Alignment with Powering the Future to 2050

	PF 2050 GOALS					
IDP OBJECTIVES	Perfect Power	Customer Freedom	Cleaner World	Digitally Driven	Purpose-Driven Culture	Future-Ready Posture
Economic Health & Expansion	●	●	●		●	●
Accommodate DG & Electrification		●	●			●
Foundational Investments (AMI, GIS)		●		●	●	
Modern Standards & Equipment	●	●			●	●
Improve Grid Flexibility	●			●		●
Increase Asset Utilization	●		●	●	●	

IDP PHASED DEVELOPMENT

IDP PHASED DEVELOPMENT

Phased development of the IDP and associated workstreams to modernize and integrate distribution planning in support of organizational evolution toward PF 2050.

COMPLETE

Phase 1 2024

Foundational Document

Establish a foundational document that aligns the organization on current state, methods, and outlook.

IN-PROGRESS

Phase 2 2025

Develop Workstreams

Develop formal workstreams on objectives to address the challenges and needs identified in Phase 1.

Phase 3 2026

Publish Public Version

Synthesize Phase 1 and Phase 2 into revised IDP document and share externally.

Phase 4 Future

Publish Recurring Updates

Establish a recurring practice of reassessing needs and publishing updated versions in conjunction with the IRP.

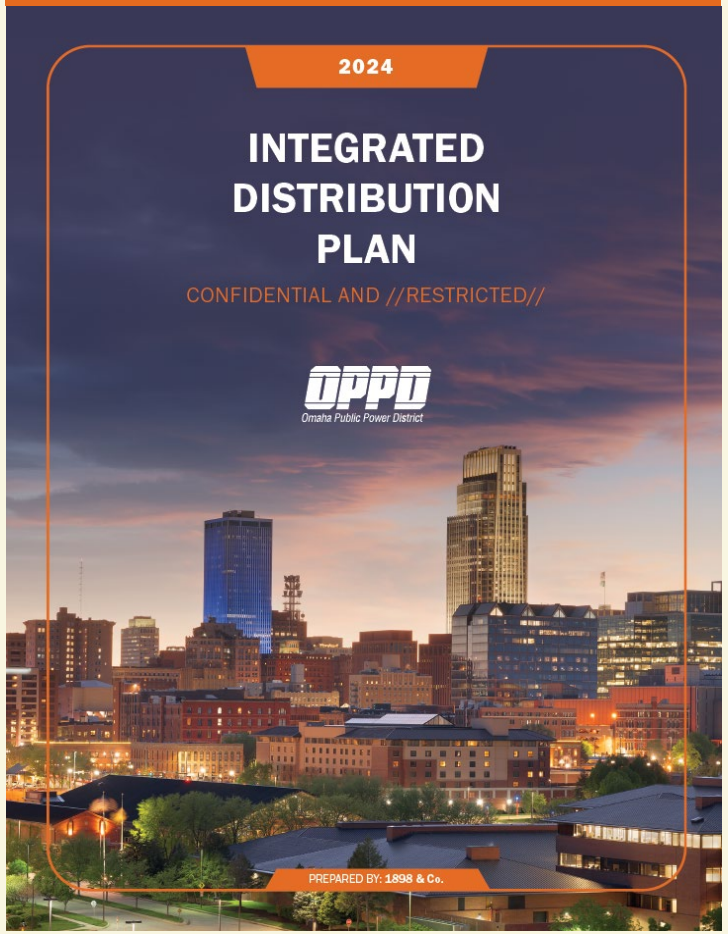
Internal Staff Support and Industry Working Groups

Consultant (1898 & Co.) Guidance

Support as needed

IDP PHASE 1 SUMMARY

IDP PHASE 1 DOCUMENT SUMMARY



Outline of the OPPD IDP Phase 1:

1. **Preface**
2. **Executive Summary**
3. **Current State of the Grid**
4. **Planning the Next Generation Grid**
5. **Near-Term Distribution Investment Plans**

Key Insights and Alignment

- Current state of the distribution grid
- Grid modernization efforts in-progress
- Near-term investment focus

Biggest Challenges from Phase 1 Diagnosis

- Creating a next generation grid
- Maintaining reliability and resiliency
- Transitioning from coordinated to integrated distribution functions
- Unprecedented load growth

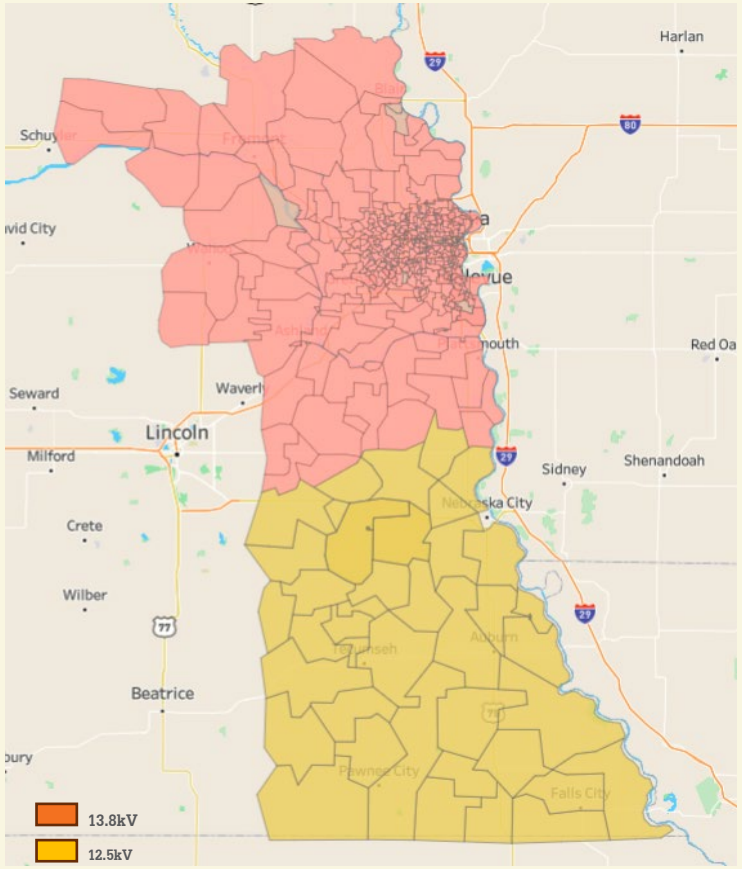
IDP PHASE 1 SUMMARY

KEY INSIGHTS AND ALIGNMENT

CURRENT STATE OF THE DISTRIBUTION GRID

Two voltage levels
12.5kV & 13.8kV

500+ Distribution Feeders
90+ Distribution Substations



Comprised of millions of components spread out over 5,000 sq miles

Over 12,000-line miles, about half overhead and half underground

Figure 7 : Underground vs. Overhead in Line Miles

5,653
MILES
UNDERGROUND

6,670
MILES
OVERHEAD

Distribution design practices have evolved over OPPD's 80-year history leading to **varying levels of design basis** throughout the service territory

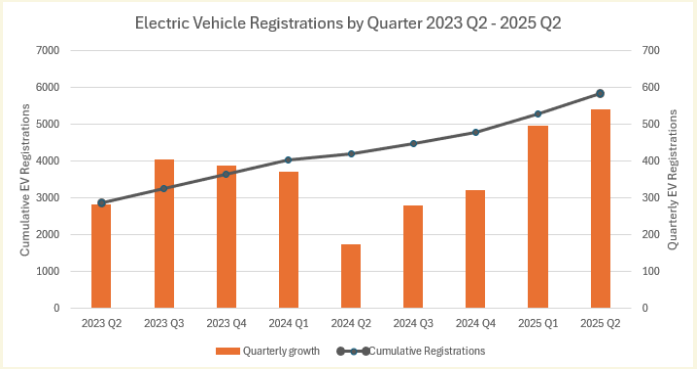
Diverse feeder composition and load density across metro, suburban and rural communities

Key Insights and Alignment

CURRENT ADOPTION – EV, DER, DSM

Electric Vehicles

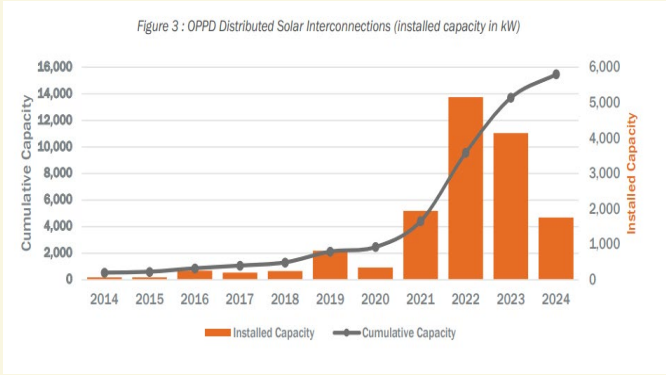
- ~5,800 light duty EVs in service area
- 1 large EV fleet
- <1% of total system load



- Sufficient capacity margin on distribution system for light duty EV near-term forecast
- OPPD ChargePoint data shows potential to shift charging off-peak

DER – Distributed Solar

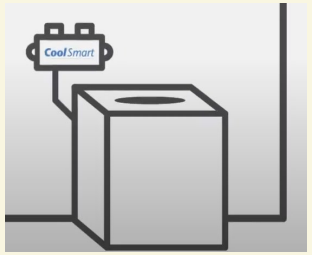
- Adoptions increased in 2022-2023 then slowed dramatically in 2024
- <1% of customer base have installations



- OPPD streamlined DER application process
- OPPD's distribution system capacity has never been a barrier to a customer-owned solar interconnection and is not forecasted to be in the near-term

Demand Side Management

- Three major programs
  - Cool Smart, Smart Thermostat & '467' Curtailment Riders
  - 125MW accredited (149MW nameplate)



- Current approach is broad brush solicitation for customer interest
- Potential for targeted approach on distribution system

Key Insights and Alignment

DISTRIBUTION AUTOMATION HISTORY AND MATURITY

Distribution automation (DA) is the use of advanced sensors, controls, and communication technologies to monitor, coordinate, and automatically optimize the performance of the electric distribution system in real time.

Pre-2017

- Deployed distribution automation equipment on adhoc basis for monitoring and troubleshooting

2017

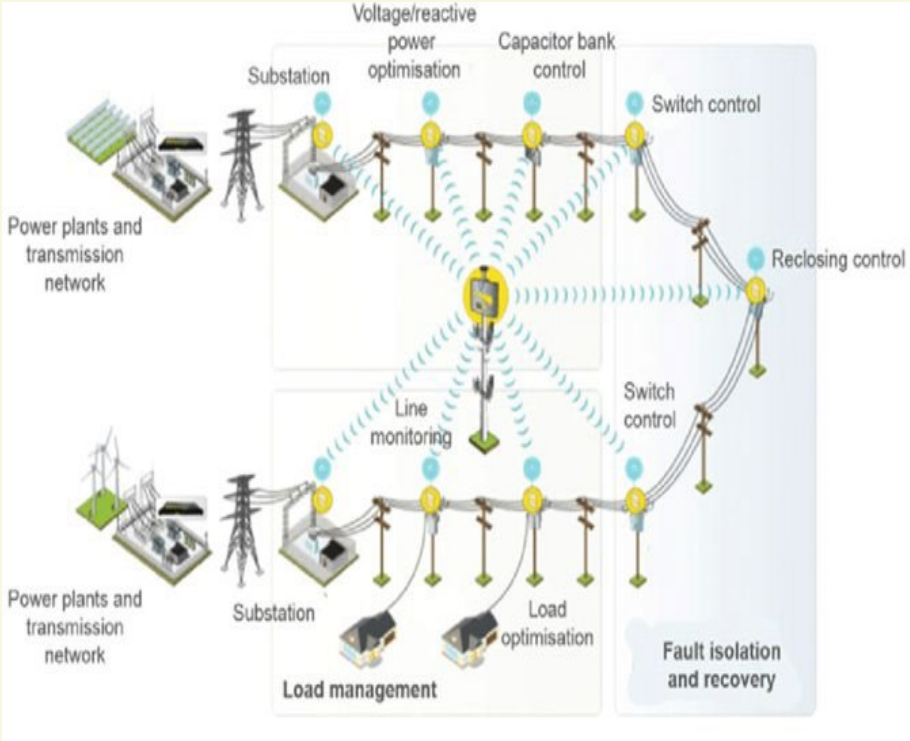
- North Omaha Smart Grid Pilot
- Automated five distribution feeders across two substations
- Highest value was the recloser devices that minimized customer outages

2021-2024

- Communicating Recloser Project (Grant Funded)
- Upgraded a subset of existing and deployed new reclosers with cellular communications

2024-2025

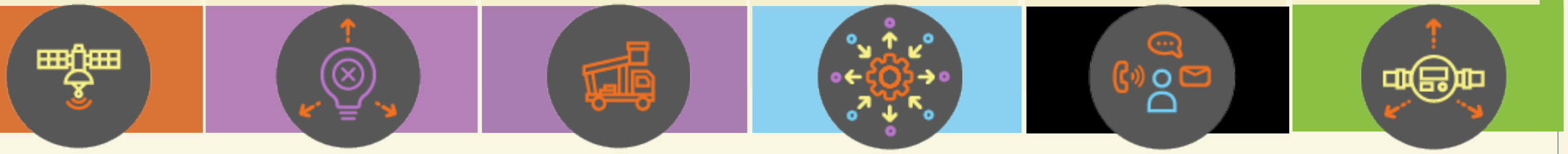
- Distribution Automation (DA)
- Developed proposed DA recloser philosophy and published in IDP Version 1
- Phased implementation plans developed, closely tied to grant funding opportunities



Key Insights and Alignment

INVESTMENT IN INTEGRATED DISTRIBUTION GRID PLATFORMS

	Geographic Information System	Outage Management System	Field Service Management	Enterprise Asset Management	Customer Platform	AMI Meters & MDMS
Vendor	ESRI	OSI	SEW	Maximo	SEW	Landis & Gyr
Initial Deployment	2024	2025	2025	2025	2025	2025-2028



Key Insights and Alignment

IDP PHASE 1 SUMMARY

BIGGEST CHALLENGES FROM PHASE 1 DIAGNOSIS

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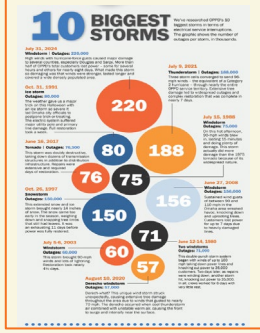
Building a Next Generation Grid

- Exciting but complex future
- Capital and resource intensive
- Near-term investment focus is technology platforms

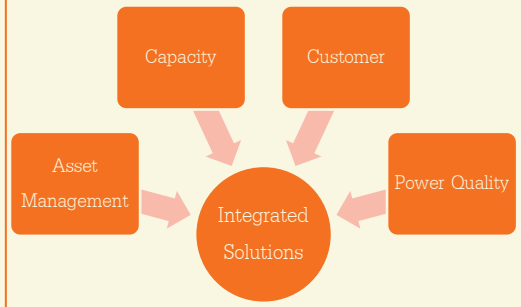
Maintaining Reliability & Resiliency

- First quartile performance achieved in Reliability (SD-4) and Customer Satisfaction (SD-5)
- Increasing frequency of major storms are testing customer patience and resiliency of the distribution system



Coordinated vs Integrated Distribution Functions

- Numerous functional groups trigger coordinated modifications to the distribution grid today
- Ideal future is where functions are more aligned on integrated solutions to address multiple grid needs



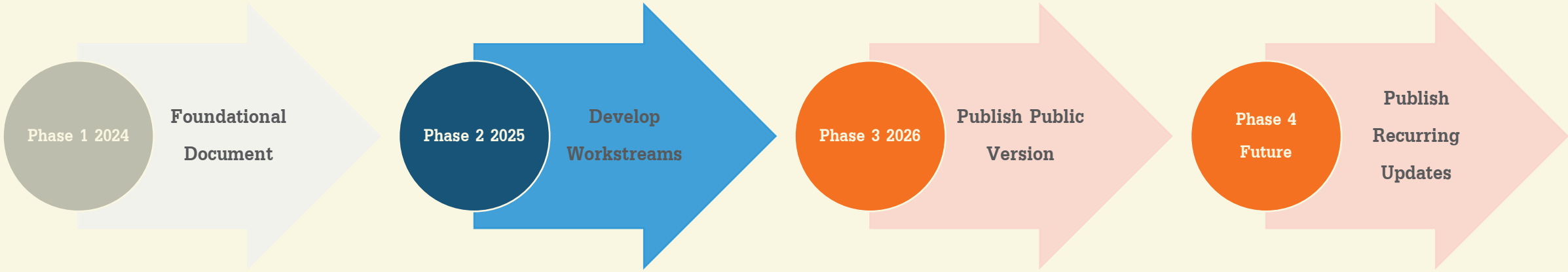
Unprecedented Load Growth

- +28,000 customer meters added last 5 years
- Numerous large commercial customer requests
- Accelerating substation expansion plans

IDP PHASE 2 WORKSTREAMS

IDP PHASE 2 – 2025

Phase 2 will be a crucial step for OPPD to convert priorities and concepts identified in Phase 1 into formal workstreams.



Q1 2025 – Establish Objectives

Prioritize and refine list of workstreams that OPPD will execute as part of IDP Phase 2 effort including draft charters and owners.

Q2 2025 – Kickoff Workstreams

Workstream owners to build out detailed objectives and execution plan.

Q3-Q4 2025 – Progress Workstreams

Workstream owners to execute work and produce outputs necessary to meet the needs of Phase 3 including laying out tactical plans and expected benefits.

Phase 2 Workstreams prioritized based on Phase 1 diagnosis of challenges and achievability in 2025

IDP LED & COORDINATED WORKSTREAMS

- Workstreams being initiated out of IDP

IDP Led Workstream	Challenge	Benefit
Geo-spatial Load Forecasting Tool (LoadSEER)	Load Growth	Precision in projecting territory's organic demand growth
Distribution Capacity Design Review	Load Growth	Maximizing existing and evaluating new designs for increased capacity
DER Integration Guidelines	Next Gen Grid	Facilitating DER reliably

- Workstreams previously in motion and coordinated with IDP

IDP Coordinated Workstream	Challenge	Benefit
Large Customer Requests	Load Growth	Enhanced administration of large customer requests
AMI Ecosystem	Next Gen Grid	Foundational platforms for grid modernization
Distribution Automation Program	Next Gen Grid	Enhanced reliability and situational awareness
Systems Weather Hardening	Reliability & Resiliency	Minimizing customer outages

KEY TAKEAWAYS & NEXT STEPS

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Key Takeaways

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Next Steps

IDP Phase 2 workstreams

- Distribution Geo-spatial Load Forecasting tool
- Distribution Capacity Design Reviews
- DER Integration Guidelines

Merge IDP with IRP to create and publish Integrated System Plan (ISP) in 2026

Future workstreams under reoccurring IDP

QUESTIONS