Advanced Metering Infrastructure

Item #180141
July 9, 2018

What is Advanced Metering Infrastructure? (AMI)

- Advanced metering infrastructure is an architecture for automated, two-way communication between a smart meter and a utility.
- Provides utility companies with real-time data about power consumption.
- Allows customers to make informed choices about energy usage.

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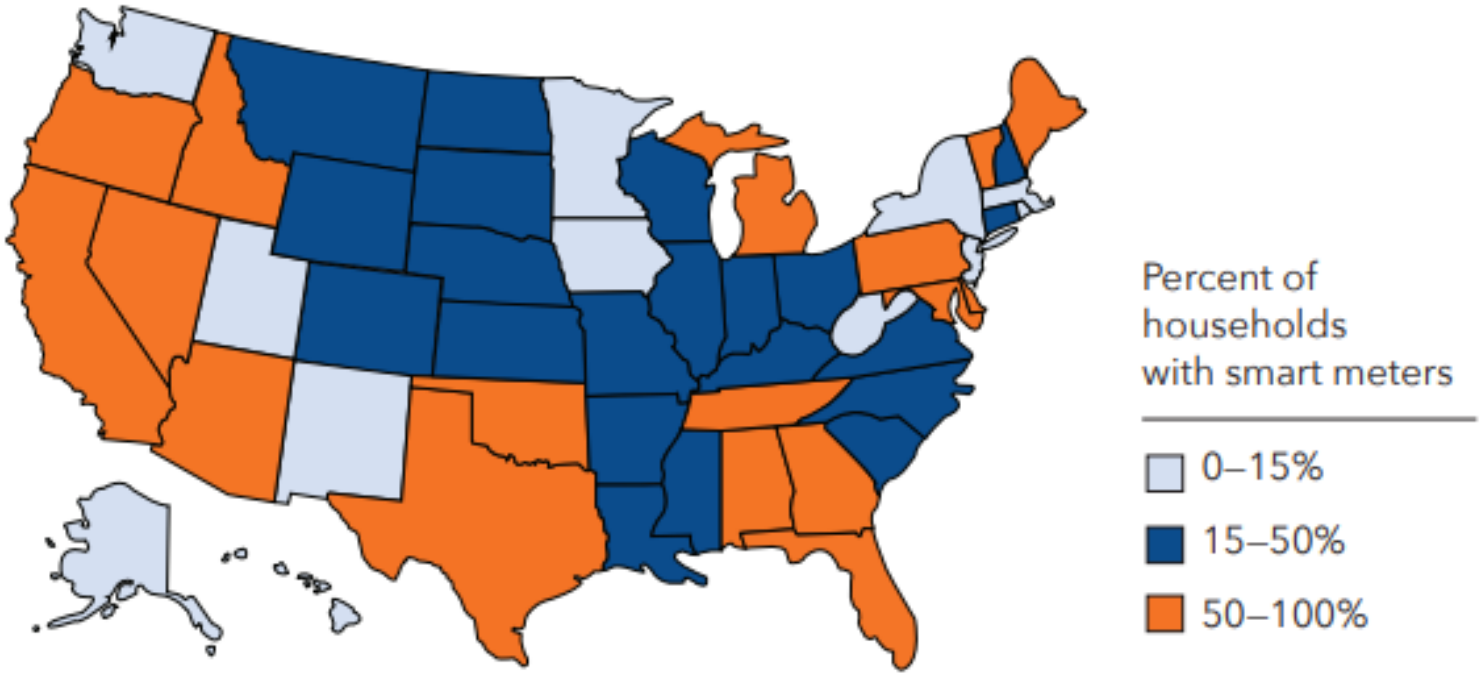
- Nearly 8 million smart meters installed in Florida.
- 90 million meters are projected to be deployed in the U.S. by 2020.



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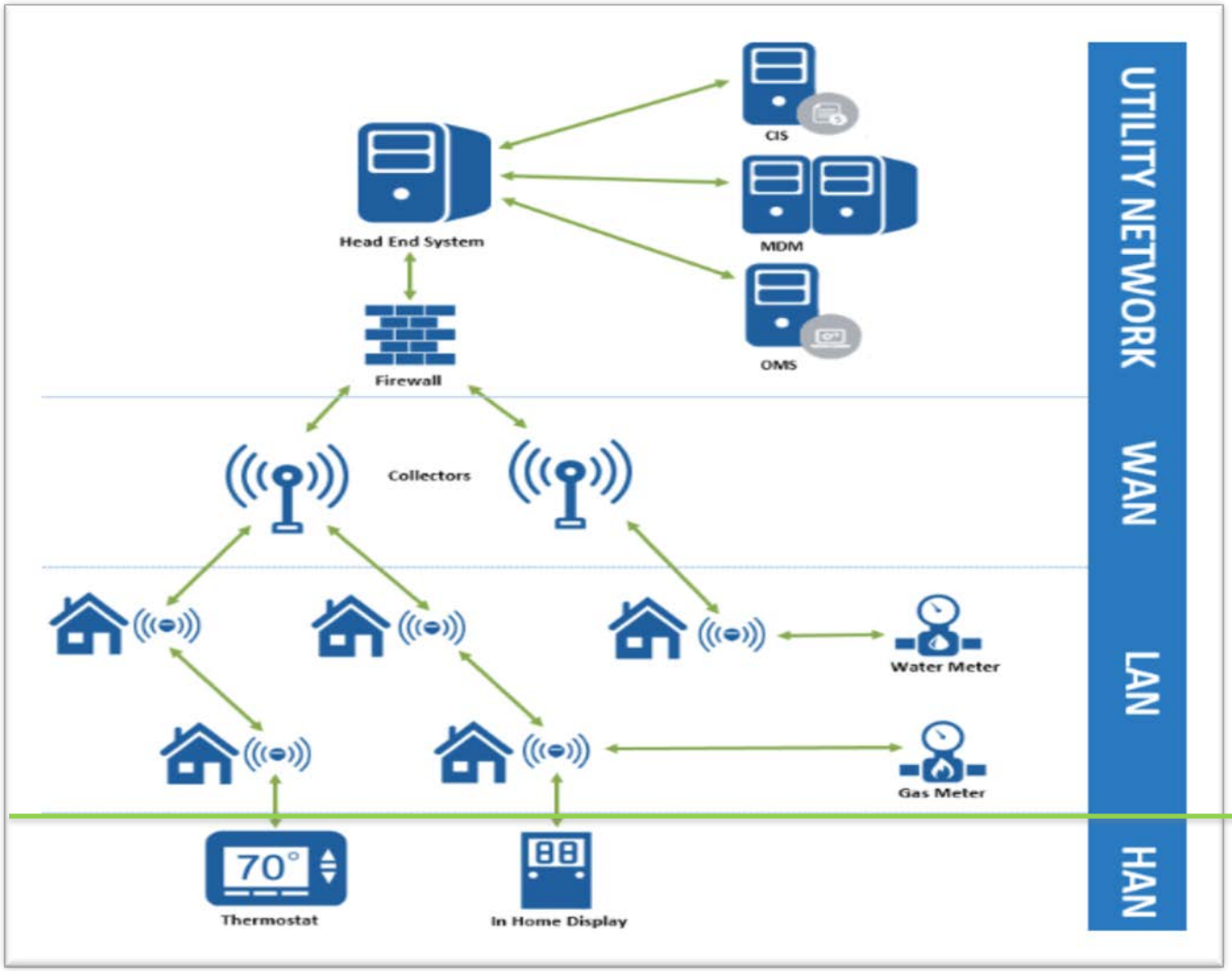

Initial Roll-out

Long-term

Typical AMI System Design

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GRU AMI Project Goals & Objectives

- SMART goals identified for AMI:
  - Improve safety for both our customers and personnel.
  - Promote superior information gathering and sharing.
  - Provide improved customer choices and engagement.
  - Increase customer service and satisfaction.
  - Deliver advanced Smart City functionality.
  - Improve reliability for the utility.

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Business Cases

- GRU hired two independent consulting companies to conduct Business Cases for AMI.
- The studies evaluated whether the AMI initiative was desirable and viable for GRU.
- A Gap Analysis, Assessment, and Feasibility Study were also conducted.
- Estimated costs and benefits were defined.

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What Are The Benefits?

- **Operational Benefits:** Improving the accuracy of meter reads, remote turn on/offs, energy theft detection and response to power outages, while eliminating the need for on-site meter reading.

- **Financial Benefits:** AMI brings financial gains to GRU by reducing equipment and maintenance costs, increasing individual meter accuracy, enabling faster restoration of electric service during outages and streamlining the billing process.

- **Customer Benefits:** AMI benefits customers by detecting meter failures and meter leaks early, accommodating faster service restoration, and improving the accuracy and flexibility of billing. AMI allows for time-based rate options that can help customers save money and manage their energy consumption.

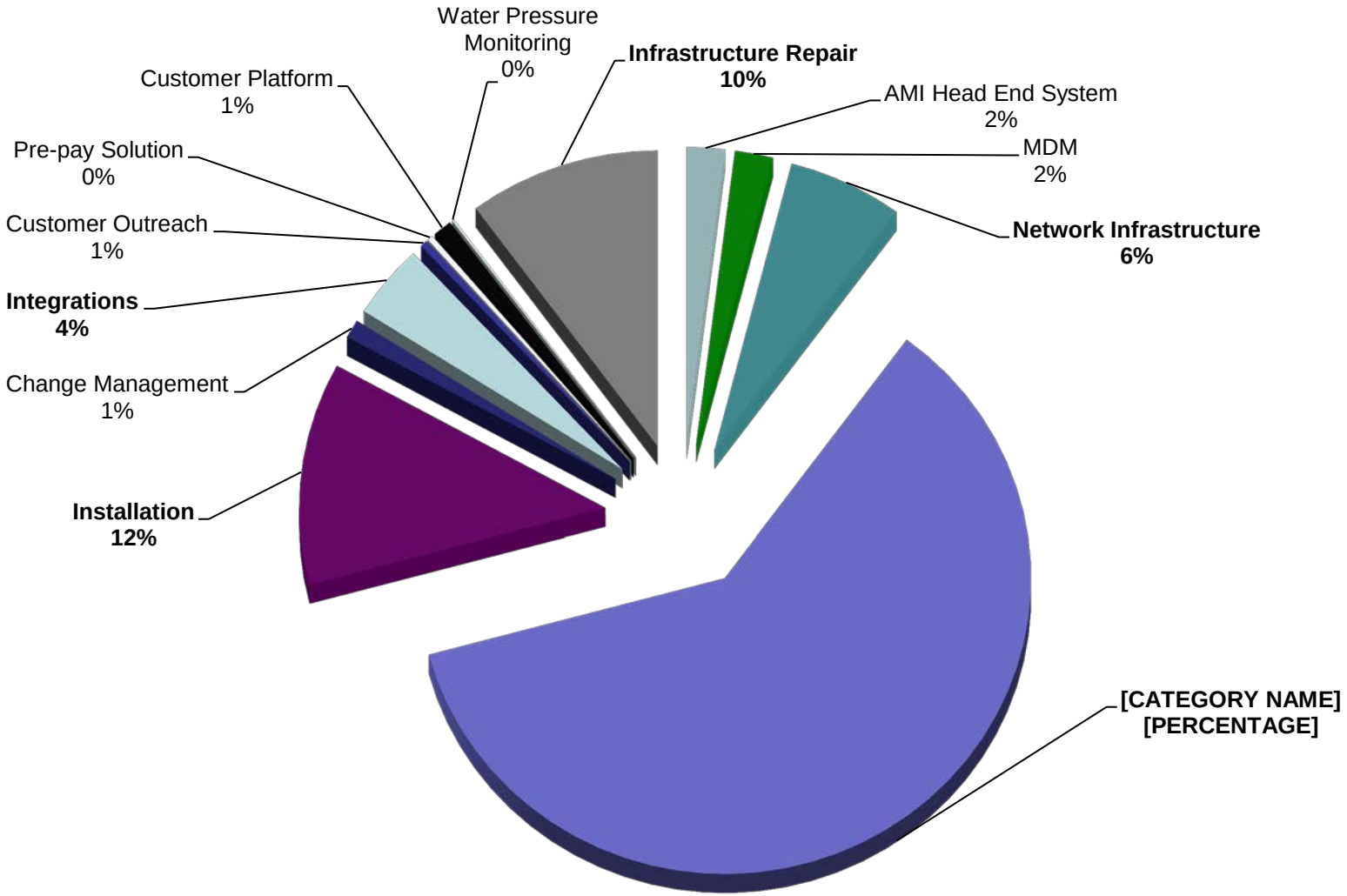
Benefits Identified Through Business Cases

- Individual Meter Accuracy Benefit
- Revenue Protection / Bad Debt Benefit
- Remote Disconnect / Connect, and Meter Reading Benefit
- Annual Benefit from proper Transformer Sizing Benefit
- Annual Benefit From Bill Complaints And Billing Exceptions
- Improved System Reliability
- Reducing Estimated Bills and Shorter Billing Cycle Benefit
- Distribution Network Management and Variable Pricing Structure Benefits
- Customer Intelligence and Improved Data Quality
- Prepay Cash Flow Benefit

* This is a limited list of benefits

What Are The Costs?

AMI Cost Breakdown



* Costs are estimates based on business cases. Costs are subject to change.

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Projected Costs

AMI Components	Capital Cost
Meters (Electric, Water, Gas)	$32,000,000
Communication Canopy	$3,000,000
AMI Head-End System	$1,000,000
Meter Data Management System	$1,000,000
Mass Meter Install Vendor	$6,000,000
Business Process / Change Management	$500,000
Various Integrations	$500,000 - $2,000,000
Customer Outreach	$200,000
Pre-pay Solution	$150,000
Customer Engagement Platform	$500,000
Water Pressure Monitoring System	$60,000
Infrastructure Repair	$5,000,000
Total	$51,410,000

* Costs are estimates based on business cases. Costs are subject to change.

Rate Impact

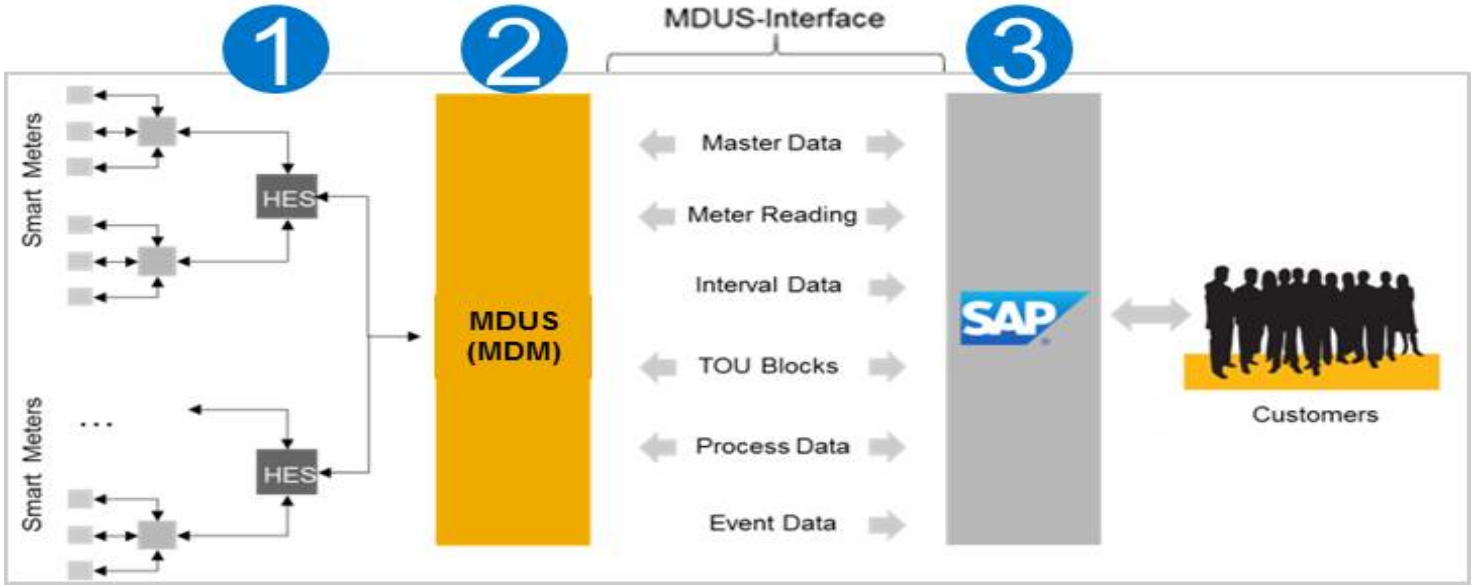
Benefit	What's Needed?	Cost	Annual Capital Cost	Benefit	Rate Pressure
Meter Accuracy Benefit	Meters & Deployment Contractors	$37 M	$2.5 M	$3.5 M	(-) $1 M
Annual Meter Replacement Cost Benefit	Meters & Deployment Contractors	-	-	$2 M	(-) $2 M
Remaining Benefits From Business Cases	Remaining AMI Components	$14 M	$1 M	$5.4 M	(-) $4.4 M
	Totals	$51 M	$3.45 M	$10.9 M	(-) $7.4 M

- By deploying just the meters, benefits start accruing day one, resulting in a negative rate impact.

What's Ahead?

Integrations

- It has been recommended that organizations that utilize the SAP CIS, leverage the SAP Meter Data Unification and Synchronization (MDUS) adapter.
- SAP MDUS provides automation and integration of meter data with AMI, MDM and SAP CIS systems.
- The absence of using SAP MDUS within the integration architecture will require a custom integration solution for meter data exchange between the AMI, MDM and the SAP CIS systems.
- A custom integration strategy can be undertaken however can also add complexity, risk, cost, effort and time to the project.



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Projected Schedule

- New meters and the communication canopy can be installed and benefits received prior to SAP upgrade. An example of this would be the meter accuracy benefit. We could receive this benefit without an integration to SAP.
- Several benefits like smart city functionality and smart street lighting could take place once the communication canopy is installed.
- It is projected that by the time we have full meter deployment , SAP will be upgraded and that integration could take place and full functionality would be available at that time.
- Many AMI tasks can be executed in parallel with the ERP / SAP upgrade efforts allowing for a timely, cost efficient and effective integration effort.

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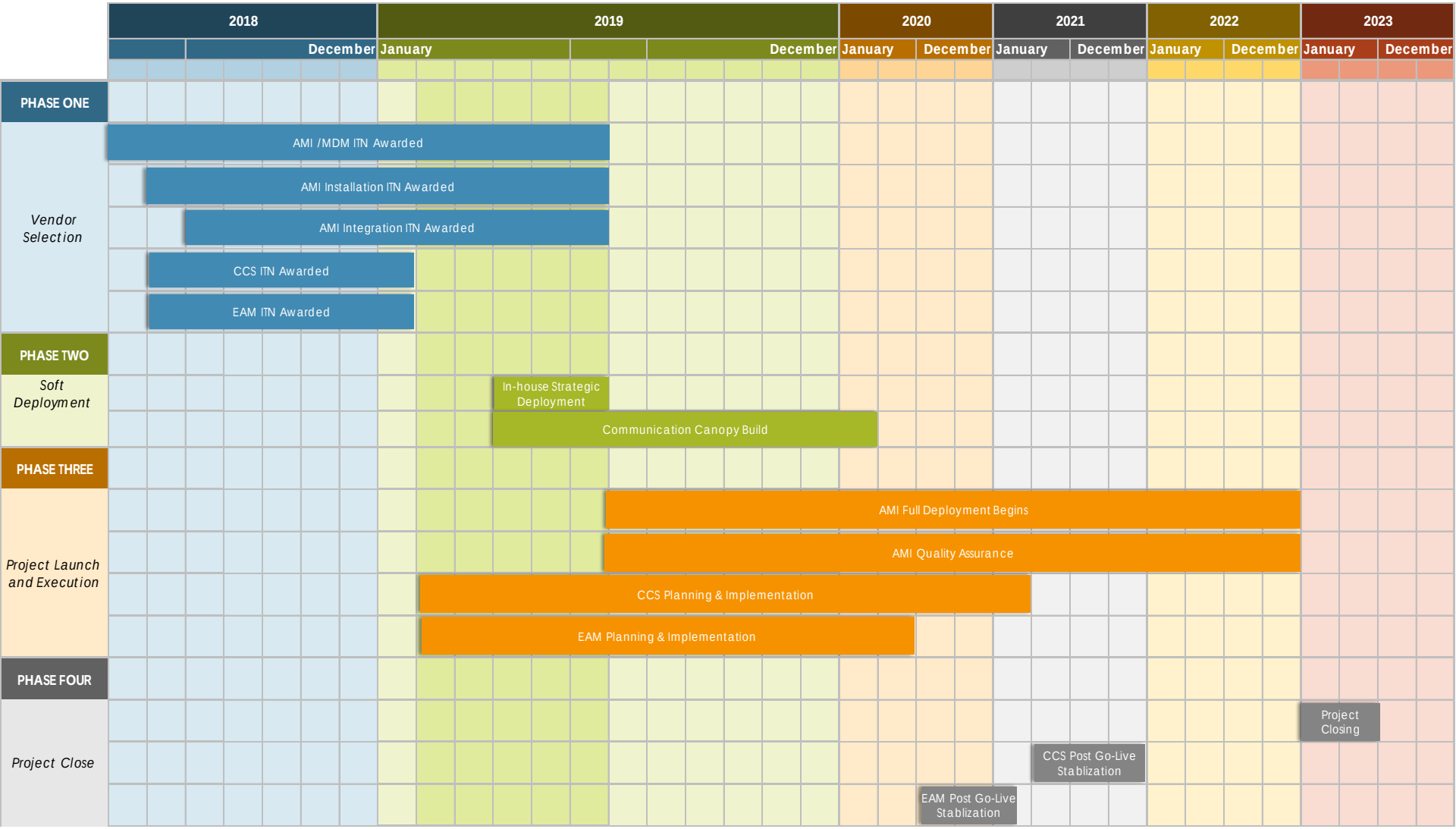
What Does Deployment Look Like?



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Questions?

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