



RON GALPERIN  
CONTROLLER

December 10, 2015

Honorable Members of the City Council  
of the City of Los Angeles  
c/o City Clerk  
Room 395, City Hall  
Los Angeles, CA 90012

Department of Water & Power  
Board of Water & Power Commissioners  
111 North Hope Street  
Los Angeles, CA 90012

Under City Charter Section 266 (a), the City Controller, Mayor and City Council shall jointly cause at least once in every five years, an Industrial, Economic, and Administrative (IEA) Survey of the Department of Water and Power (DWP) and shall select an independent qualified organization to conduct the IEA Survey.

The 2015 IEA Survey of DWP, administered by representatives from the Controller's and Mayor's Offices, and the Chief Legislative Analyst (CLA) representing the City Council, was prepared by Navigant Consulting, Inc. at a cost of \$462,500. The last IEA Survey of DWP was prepared in 2009 at a cost of \$803,154.

DWP has over 9,000 employees who aim to provide low cost and reliable service to nearly 3.8 million customers. DWP has approximately 3,600 transmission lines, over 7,000 miles of water mains and 51 generating units.

The IEA Survey provides an extensive review and analysis of key components of DWP, as well as major challenges in upgrading power system infrastructure and continuing to provide a reliable water supply while previously dependable resources diminish. The executive summary points out many of the key challenges DWP is facing and makes recommendation for changes.

Sincerely,

Ron Galperin  
Controller  
City of Los Angeles

Eric Garcetti  
Mayor  
City of Los Angeles

Herb J. Wesson, Jr.  
President  
Los Angeles City Council



# 2015 Industrial, Economic and Administrative Survey of the Los Angeles Department of Water and Power

Prepared for:  
The City of Los Angeles



Navigant Consulting, Inc.  
515 South Flower Street  
Suite 3500  
Los Angeles, CA 90071

213.670.3200  
navigant.com



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## Executive Summary

The Los Angeles Department of Water and Power (LADWP or Department) is one of the largest and most unique utilities in the U.S. The Department serves approximately 700,000 water customers and 1.4 million electric customers across Los Angeles, with an asset footprint that includes over 7,000 miles of distribution mains across the State of California and 3,500 miles of overhead transmission circuits across five (5) states. The LADWP has a workforce of nearly 10,000 employees, who aim to achieve the Department’s Vision: Providing clean, reliable water and power and excellent customer service in a safe, environmentally responsible and cost-effective manner.

The history of the Department includes a long period of relatively low rates and financial stability, exemplified by the LADWP’s ability to avoid the significant financial distress that impacted Investor Owned Utilities (IOU) during deregulation in the early 2000s. The Department’s ability to avoid the financial, operational, and regulatory challenges that hounded many IOUs, and deliver relatively low-cost and reliable service to citizen-customers across Los Angeles, was a significant accomplishment.

However, the environment in which the Department now operates has changed. Over the last decade, the LADWP has come to face a number of external and internal challenges that directly impact the ability to achieve its Vision. Prominent external challenges include:

- Increasingly stringent regulatory requirements that drive priorities and decision-making in both the water and power systems.
- Sustained and extreme drought – and more broadly, the impacts of climate change – that will only continue to impact the delivery of both water and power service.
- Credible and potentially significant physical and cyber security threats that, if realized, could have the potential to undermine service delivery.
- Focus from citizen-ratepayers and other stakeholders on improved customer service, with a drive toward enhancing the overall “customer experience”.

Internal challenges include:

- Aging infrastructure in both the water and power systems, which if left unaddressed will immediately impact service reliability and long-term costs.
- The sheer size of the capital programs – and significant program management acumen – required to address the challenges driven by regulatory change and aging infrastructure.
- The immediate and urgent need to address critical – but outdated – IT systems, while also definitively resolving issues with existing IT system deployments.
- Maintaining the Department’s overall financial health and meeting financial targets/metrics, while designing rates that meet capital and operating requirements.

In addition, the governance structure – both internal to the Department and external within the City – may no longer be the most suitable, while improving increased transparency into Department decision-making and performance versus goals is critical.

We believe that addressing these and other challenges facing the Department requires equal commitment to both planning and execution. Importantly, our review confirms that the Department has made significant strides in designing plans to meet many of these and other challenges. Specifically, results from our review reflect improved plans and planning processes in both the Power and Water Systems. For instance, Navigant considers the 2014 Integrated Resource Plan (IRP) to be a robust plan, which reflects the Department’s commitment to meeting customer load requirements while also addressing regulatory requirements and other strategic goals. Similarly, the Department’s collection of water resource plans are strong, and show that the Department is on track to achieve the City’s and the Department’s shared overarching goals of increasing local water supply and expanding conservation efforts.

The Department’s plans also reflect a commitment to system reliability; the 2013 Power System Reliability Program (PSRP) is a key achievement of the Department. It is a comprehensive plan for the management of the Department’s generation, substation, transmission, and distribution assets, and is well aligned with the Department’s stated objectives. The Water System has created an Asset Management group within the Water Engineering and Technical Services (WETS) group that has drafted several asset management plans for critical asset classes.

However, while planning efforts have improved across the Power and Water Systems, our review confirms a mixed record of implementing those plans. In short, Navigant found that the Department does not currently have the policies, processes, and personnel in place to support the full implementation of its large-scale plans. The ability to meet future Power and Water System needs will depend on clear governance, robust internal controls, transparent and defensible financial processes supporting rates, strong program management in capital projects and other disciplines across the utility, and the ability to hire exceptional candidates for key roles.

In addition to Physical Infrastructure, our review focuses on areas that directly support the delivery of core utility service to the citizen-customers of Los Angeles. While the Department has made strides in the Physical Infrastructure focus areas, the Department’s effectiveness in the Administrative Infrastructure focus areas evaluated as part of this Survey is mixed in terms of both planning and program execution. Specifically:

- **Security:** While certain aspects of Security such as CIP Compliance and Water Operations Technology (OT) security are robust, security is not appropriately addressed on an enterprise level. Past assessments by LADWP security staff and the recent assessment conducted by Navigant have revealed a number of factors that limit the Department’s ability to mitigate security threats and vulnerabilities, including a lack of formal cyber and physical security processes, limited risk assessments, constrained resources, and limited executive level support.
- **Emergency Preparedness and Disaster Recovery:** The Department has many of the policy frameworks that help define an emergency preparedness program. However, features of rigorous emergency preparedness programs exhibited by utilities – including evidence of routine and diverse testing, adherence to training requirements and schedules, clear accountability for plan design, development, and continuous improvement – are lacking at the Department.
- **Technology Infrastructure:** The Information Technology Services Division (ITSD) is appropriately organized and performs well in many of the critical areas for which it has



responsibility. However, ITSD’s biggest challenge is in the area of software applications, due in part to the age and diversity of the applications, and in part to the absence of a clear information technology (IT) governance framework and an IT Strategic Plan. The Department has a number of large IT application projects in the pipeline and it is critical that ITSD have effective complex project management and a documented strategic plan.

- **Customer Service:** Navigant conducted a benchmarking study on critical performance measures within Customer Service. Our team selected 20 performance measures across six Customer Service areas to evaluate the Department; however, LADWP could only produce 14 of the requested measures. Where data was provided, Navigant found that the Department generally fell in the 3<sup>rd</sup> or 4<sup>th</sup> quartile for the selected measures. In addition, Navigant believes the Department has an opportunity to make significant progress on customer service objectives through a focus on technological change in concert with business process improvement and enhanced staffing.
- **Economic Development and Community Outreach:** We believe there are foundational aspects of the Economic Development and Community Outreach functions (such as program strategy, design, implementation, and monitoring) that can be strengthened. These would include dedicated strategic planning efforts that would dovetail with the Department’s and City’s overall goal-setting activities and clear program performance targets and consistent reporting of program performance to Department, City, and customer stakeholders. Navigant also recommends that the Department clearly determine accountability for these activities.

A variety of key and common themes emerge from our review of the Administrative Infrastructure focus areas, including principally the need to clearly articulate accountability for key tasks and activities, dedicate greater attention to strategic planning, and provide accurate on-going performance reporting against those plans. In short, the standard for planning and performance management that is now reflected in the Power and Water Systems should be applied to all Administrative Infrastructure areas examined as part of our review. For too long, the key functions of the Joint System have been underserved – we believed this must change to bring the Department in-line with its utility peers.

Finally, while the Department faces a large number of challenges that are somewhat common across the utility sector, there are many unique aspects of the Department’s organization and operation that significantly influence the response to those challenges. As a municipal utility, the Department has a variety of stakeholders to which it must be responsive. Unfortunately, the nature of the governance arrangement in the City is universally seen as an inhibitor to achieving optimal performance. Our view regarding the governance arrangement was supported by the results of interviews with key stakeholders across the Department and the City: All parties believe that LADWP is significantly hindered by its governance structure.

In closing, all utilities encounter significant challenges in today’s environment – from increasing regulatory requirements, to aging infrastructure, to the threat of a material security breach (among many others). The most successful utilities are those that are proactive (can “get ahead” of the evolving environment through planning and program execution), and also effective when *reactive* (are nimble and flexible, and can move quickly in response to changing market and organizational dynamics). The Department’s planning acumen in the areas of Physical Infrastructure reflect a commitment to being well-positioned for future service delivery; aspects of Administrative Infrastructure require attention in

this area. The ability to match this attention to planning with demonstrated ability to execute and report on those plans is critical.

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The major findings for each survey focus area are summarized in the following chapters and presented in greater detail in the separate report volumes. Each assessment is based on numerous interviews, document review, peer research, and Navigant's experience with LADWP. In these chapters, Navigant also provides recommendations to address the major findings.

The chapters are organized in the following order and the corresponding volume is referred to in parentheses:

- The Current Environment
- Power Infrastructure (Volumes I and II)
- Water Infrastructure (Volume III)
- Governance (Volume IV)
- Unified Water Approach (Volume V)
- Security and Emergency Preparedness (Volume VI)
- Technology Infrastructure (Volume VII)
- Customer Service (Volume VIII)
- Economic Development and Community Outreach (Volume IX)
- Rates Benchmarking (Volume X)
- Conclusion

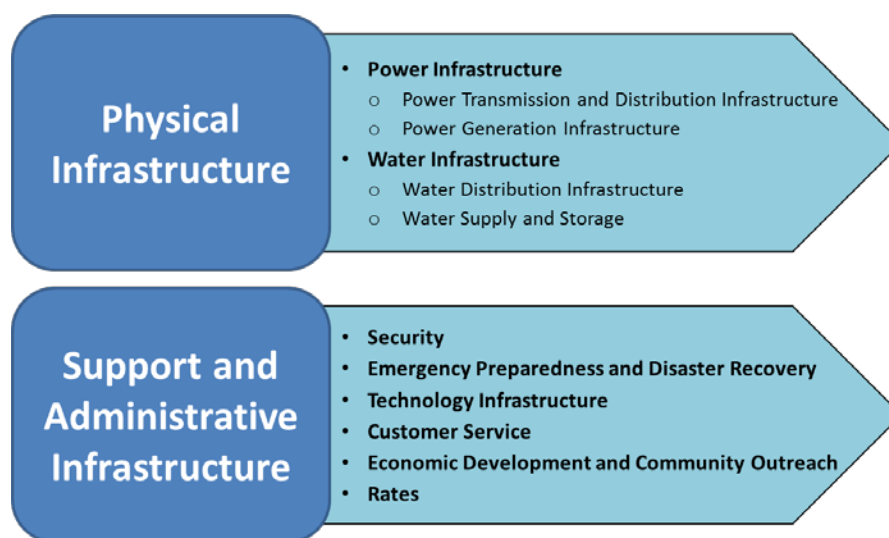
## 1. Introduction and Approach

Section 266 of the Los Angeles City Charter requires that the City Controller conduct a Survey of the property and business of each of the City’s proprietary departments, including the Los Angeles Department of Water and Power (LADWP, the Department), at least once every five years. These Surveys must be conducted jointly with the Mayor and City Council (Joint Administrators).

The 2015 Industrial, Economic and Administrative Survey (IEA Survey) of the LADWP is a comprehensive review of the strategic and operational readiness of the organization to meet critical challenges and an evaluation of current operations versus peers or leading practices. The goal of the Survey is to provide targeted recommendations for improvement through an independent and thorough series of assessments. Navigant Consulting, Inc. (Navigant) was retained to lead this effort.

Most of LADWP’s critical challenges currently revolve around power and water physical infrastructure and certain areas of administrative infrastructure, which consequently comprise the focus areas of the IEA Survey (see Figure 1-1).

**Figure 1-1. Focus Areas of the 2015 IEA Survey**



An important addition to the IEA Survey is the topic of governance. Although this topic was not originally included in Navigant’s scope of work, stakeholder interviews made it clear that governance concerns are of great interest and deserve focused attention.

### 1.1 Report Organization

The major findings for each focus area are summarized in the following chapters and presented in greater detail in the separate report volumes. Each assessment is based on numerous interviews, document review, peer research, and Navigant’s experience with LADWP. In these chapters, Navigant also provides recommendations to address the major findings.

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- Rates Benchmarking (Volume X)
- Conclusion

## 2. The Current Environment

Throughout its history, the Department has been recognized as an organization that contributes significantly to the City’s overall economic and policy agenda. In addition to the City Transfer (a mechanism through which a portion of the Department’s annual estimated electric revenues are transferred to the Los Angeles General Fund), the LADWP is widely observed as an engine for employment and economic development, and a key facilitator achieving local and regional objectives in areas such as renewable energy and water conservation.

In light of this role, the success of the Department in the execution of its strategic vision is key to the City. However, like all utilities, the current environment in which the Department plans and operates is characterized by a number of significant challenges. These challenges are both external (present due to regulatory, political, or market forces outside the Department’s immediate control) and internal (distinct to the Department given its current operations, institutional history, organizational culture, and relationship to key stakeholders). Prominent external challenges include:

- Increasingly stringent regulatory requirements that drive priorities and decision-making in both the water and power systems.
- Sustained and extreme drought – and more broadly, the impacts of climate change – that will only continue to impact the delivery of both water and power service.
- Credible and potentially significant physical and cyber security threats that, if realized, could have the potential to undermine service delivery.
- Focus from citizen-ratepayers and other stakeholders on improved customer service, with a drive toward enhancing the overall “customer experience”.

Prominent internal challenges include:

- Aging infrastructure in both the water and power systems, which if left unaddressed will immediately impact service reliability and long-term costs.
- The sheer size of the capital programs – and significant program management acumen – required to address the challenges driven by regulatory change and aging infrastructure.
- The immediate and urgent need to address critical – but outdated – IT systems, while also definitively resolving issues with existing IT system deployments.
- Maintaining the Department’s overall financial health and meeting financial targets/metrics, while designing rates that meet capital and operating requirements.

In addition, the governance structure – both internal to the Department and external within the City – may no longer be the most suitable, while improving increased transparency into Department decision-making and performance versus goals is critical. These and other challenges represent sources of risk to the Department’s ability to achieve its vision and mission around reliability, environmental stewardship, customer service, and costs.

Comprehensive strategic and operational planning is pivotal for any utility facing this set of challenges. Our review confirms that the Department’s plans are robust in many areas related to the delivery of core power and water utility service. However, the Department requires more than plans to make

demonstrable progress in these areas: Delivering the programs evaluated as part of the IEA Survey will require additional resources and expertise in various areas across the Department. Specifically, the LADWP requires staff with significant domain knowledge, capabilities, and experience in areas such as capital program management, IT system deployment, testing and implementation, and customer service (among others) in order to deliver on existing plans and meet current and future challenges. Without a well-structured and coordinated response in the area of staffing and resourcing (procurement), the ability of the Department to execute on its plans will be compromised.

Finally, the Department requires a decision-making framework that is defined by clear accountability, transparency in reporting, and processes that enable nimble and flexible decision-making to successfully execute its plans. In our experience, this kind of information, decision-making, and governance framework is central to achieving success in complex program management.

## 3. Power Infrastructure

### 3.1 Objectives & Approach

This chapter presents Navigant’s findings on Power Infrastructure. Power Infrastructure is particularly important as LADWP enters a major transition period to simultaneously reduce greenhouse gas emissions and realize a cleaner energy future, repower in-basin units to eliminate once-through cooling, and deliver reliable electricity while supplying power to its customers at competitive prices. For the IEA Survey, Power Infrastructure encompasses:<sup>1</sup>

- Power Generation Infrastructure
- Power Transmission and Distribution (T&D) Infrastructure

**Power Generation Infrastructure:** This topic is focused on LADWP’s 2014 Integrated Resource Plan. The current and future mix of power generation resources is critical for meeting and balancing the Department’s key objectives related to the reliable supply of electricity, affordable rates, and environmental stewardship. LADWP will face significant new challenges as renewable generation capacity is increased to a major portion of the resource portfolio and new demand-side resources are developed. In this section, Navigant evaluated the Department’s 2014 integrated resource planning effort, including resource goals, modeling methodology, and LADWP’s recommended resource portfolio.

**Power Transmission and Distribution (T&D) Infrastructure:** LADWP is contending with aging infrastructure, sub-optimal contracting processes, and budget pressures. Additionally, it must integrate increasing amounts of intermittent renewable generation resources and transformational technologies such as energy storage, electric vehicles, and other aspects of the smart grid. These challenges will put additional stress on the Department’s existing T&D assets and will require further investment. Addressing these challenges while maintaining safe and reliable power supply at competitive rates requires a robust asset management function. To ensure that the Department has a sound plan to maintain, repair and replace its T&D assets, Navigant assessed the Department’s approach to asset management against best practice in the power utility industry, identified gaps, and provided recommendations to address existing gaps, using primarily the 2013 Power System Reliability Program (PSRP) and the 2014 Long-Term Transmission Assessment.

Insights from interviews and supporting document review complemented these analyses. To a certain extent, this chapter also addresses linkages (or lack thereof) between the two Power Infrastructure areas, since best practice aligns resource planning with infrastructure asset management to ensure aging assets are replaced with infrastructure that is able to meet new system requirements and maintain reliability with a modern generation mix.

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<sup>1</sup> These two sections are featured in individual report volumes (Volume I and Volume II).

## 3.2 Power Generation Infrastructure

### 3.2.1 The 2014 Integrated Resource Plan

An integrated resource plan is an electric utility's long-term plan for meeting customer loads while meeting regulatory mandates, making prudent economic decisions, and satisfying the policy and operational goals dictated by management and key stakeholders. LADWP's 2014 IRP covers the 2014-2034 period.

#### 3.2.1.1 Goals & Objectives

The Department has been focused on transforming the Power System from one dominated by fossil fuel resources (low-cost but highly polluting assets) to a cleaner, more nimble generation fleet. Significant progress has been made to this end, but in 2013 coal still accounted for 42 percent of the generation mix. The IRP completed comprehensive scenario planning which lays out alternative strategies to shape the Department's resource portfolio in order to complete this major transformation over the next 20 years.

Most importantly, LADWP must comply with mandated greenhouse gas (GHG) emissions levels. Hence, the major focus in the 2014 IRP is on evaluating multiple resource strategies to reduce GHG emissions. Specific goals featured in the 2014 IRP's recommended resource portfolio are the following:

- Reduce GHG emissions 80 percent below 1990 levels by 2050
- Eliminate once-through-cooling (OTC) in coastal thermal power plants by 2029
- Eliminate coal by 2025
- Achieve 15 percent energy efficiency savings by 2020 compared to the 2010 baseline
- Meet a renewable portfolio standard (RPS) of 33 percent by 2020 and 40 percent by 2030
- Implement 506 MW of demand response capability by 2026
- Install 178 MW of energy storage by 2021 (including 24 MW by 2016 and 154 MW more by 2021)

The 2014 IRP also includes objectives to increase local (distributed) solar, electrify the transportation sector, and invest in LADWP's Power System Reliability Program (PSRP).

State mandates impact the majority of LADWP's goals in the 2014 IRP. Coal replacement, elimination of once-through cooling, reduction of GHG emissions, higher RPS, distributed solar programs, energy efficiency and demand response are all mandated in various ways in California.

- **Reduce GHG Emissions:** The California Global Warming Solutions Act of 2006 established an aggressive GHG reduction target for the State of California, which requires LADWP to reduce GHG emissions to 1990 levels by 2020. The state goal is 80 percent below 1990 levels by 2050.
- **Eliminate Once-Through Cooling and Repower In-Basin Units:** The Clean Water Act requires LADWP to eliminate OTC cooling at its in-basin power plants by 2029. In 2000, LADWP also received a Stipulated Order for Abatement to reduce local air emissions through the repowering of its less efficient in-basin generating facilities.
- **Eliminate Coal:** Senate Bill 1368 requires LADWP to end its two coal plant contracts when they expire in 2019 and 2027 because they exceed the minimum emissions standard. Above this requirement, the Department has opted for pre- end of contract replacement (2015 and 2025).



- **Increase Energy Efficiency and Demand Response:** Senate Bill 1037 and Assembly Bill 2021 require LADWP to meet its resource needs first through all cost-effective energy efficiency and demand response. This is an open-ended requirement determined by cost-effectiveness studies.
- **Meet the Renewable Portfolio Standard:** Senate Bill 2 (1X) requires LADWP to procure 25 percent of its retail sales for RPS-eligible resources in 2016 and 33 percent in 2020. Above this requirement, the Department has opted for a 40 percent RPS in 2030; however, Senate Bill 350 recently established a 50 percent RPS in 2030.
- **Increase Local Solar:** Senate Bill 1 requires LADWP to offer a solar incentive program for customer net-metered solar up to a funding cap of \$313 million, and Senate Bill 32 requires LADWP to offer a feed-in tariff to buy 75 MW of electricity from eligible renewable energy systems. Significantly above this requirement, the Department currently offers a feed-in tariff for 150 MW and will add an additional 300 MW.
- **Install Energy Storage:** Assembly Bill 2514 requires LADWP to determine an appropriate target for cost-effective energy storage on the grid. Accordingly, LADWP developed an Energy Storage Development Plan which quantified targets for the 2016 and 2020 deadlines.

The Department’s goals are also driven by the core objective of “environmental stewardship exceeding all regulatory obligations.”<sup>2</sup> Policies and positions that are non-binding, but are influential on those of LADWP’s goals that go above and beyond state mandates, include the California Energy Action Plan and the California Energy Commission’s Integrated Energy Policy Report. Mayor Garcetti’s Sustainable City pLAN describes a vision for Los Angeles to be an environmental leader, and public feedback also made environmental concerns a top priority.

Navigant considers the Department’s goals in the 2014 IRP to be in line with the policy positions of the State of California and City of Los Angeles, as summarized in the following table. LADWP’s voluntary goals also contribute to meeting one crucial mandate: reducing GHG emissions 80 percent below 1990 levels by 2050 under AB 32.

**Table 3-1. Summary of 2014 IRP Goals & Drivers**

Goals	Drivers
Reduce GHG emissions 80 percent below 1990 levels by 2050	AB 32; core objective (environment)
Eliminate once-through-cooling (OTC) in coastal thermal power plants by 2029	Clean Water Act section 316(b)
Eliminate coal by 2025	SB 1368; AB 32; public feedback; core objective (environment)
Achieve 15 percent energy efficiency improvement by 2020	SB 1037; AB 2021; AB 32; California Energy Commission; Mayor’s pLAN, public feedback
Meet a renewable portfolio standard (RPS) of 33 percent by 2020 and 40 percent by 2030	SB 2; AB 32; SB 350; Mayor’s pLAN; public feedback; core objective (environment)
Implement 506 MW of demand response capability by 2026	SB 1037; California Energy Commission
Install 178 MW of energy storage by 2021	AB 2514; Mayor’s pLAN; public feedback
Increase local solar	SB 1; SB 32; Mayor’s pLAN; public feedback

<sup>2</sup> 2014 IRP, Executive Summary (ES-1).

Electrify the transportation sector	California Energy Commission; Mayor’s pLAn, public feedback
Invest in the Power System Reliability Program	Core objective (reliability); California Energy Commission

### 3.2.1.2 Methodology & Modeling

As the comprehensive 20-year roadmap to guide the Power System, it is critical that the 2014 IRP be created using a robust methodology and modeling approach. The IRP conforms to best practice through its preparation by a group of engineers dedicated to resource planning who collaborate with numerous work groups and functional areas of the utility, including wholesale marketing, grid operations, renewable procurement, environmental and legislative affairs, and financial services.

For the 2014 IRP, a new IRP Advisory Committee formed the cornerstone of the public outreach process. Although it did not have approval authority, the Committee played an important role in the development of the resource cases that were evaluated and the final selection of the recommended case. This addition, along with several other changes to public outreach, demonstrates the Department’s new alignment with stakeholder best practice.

The 2014 IRP uses system modeling tools to analyze and determine the long-term economic, environmental, and operational impact of select alternative resource portfolios. The resource scenarios are selected based on LADWP goals and input from Department groups. Model assumptions change based on market conditions for fuel, resource availability and pricing, regulations, load forecasts, and system reliability needs.<sup>3</sup> Navigant evaluated the core assumptions informing the model, which are effectively in line with benchmarks.

- **Load Forecast:** The IRP’s load forecast is a particularly important assumption because it directly impacts electricity generation required over the 20-year timeframe. Navigant performed a benchmarking study comparing LADWP’s forecast with other California utilities and found that the growth rate is generally in line with the California IOUs and SMUD (until 2020). However, it does not include a sensitivity analysis for a range of load growth scenarios.
- **Fuel Prices:** Navigant compared LADWP’s natural gas price forecasts to the Energy Information Administration’s Energy Outlook for the Pacific region and the California Energy Commission’s forecast, and found that the Department is consistent with these for the 2014-2024 period.
- **Renewable Costs:** LADWP used a base renewable portfolio levelized cost of energy (LCOE) based on recently signed power purchase agreements for large central solar, geothermal, and wind projects. Navigant compared the Department’s LCOE inputs to Lazard’s subsidized LCOE analysis.<sup>4</sup> LADWP’s LCOE is consistent with Lazard for most resources, but is substantially higher for wind and LADWP-built solar, likely due to older wind projects and high labor costs.
- **Carbon Prices:** Navigant benchmarked LADWP’s carbon price assumptions against an industry expert forecast range and found them to be in line with the mid scenario and the California Energy Commission’s low preliminary Integrated Energy Policy Report forecast.
- **Risk Analysis:** The 2014 IRP quantifies risk associated with natural gas price volatility by modeling high and low fuel price scenarios for each resource case and integrating a natural gas

<sup>3</sup> LADWP 2014 IRP, p. 133.

<sup>4</sup> Lazard’s Levelized Cost of Energy Analysis – Version 8.0, 2014, p. 4.

hedging program. Navigant found that other risks should also be considered for a more complete model, as described in Section 2.3.3 (Modeling Assumptions) of Volume 1.

The 2014 IRP reflects the standard practices in integrated resource planning and Navigant considers it to be in line with peer and industry expectations. However, LADWP should still consider adopting IRP best practices from leading utilities, particularly for load sensitivity analysis, risk analysis, and portfolio optimization to consider lowest-cost scenarios outside of the fixed selection.

### 3.2.1.3 The 2014 IRP Cases

The Department created five cases for the 2014 IRP based on the goals and requirements above and including updated assumptions. The cases analyzed include two coal replacement cases and three renewable and energy efficiency combinations. The 2014 IRP base case includes no pre- contract end date coal replacement, a 33 percent RPS maintained through 2030, moderate energy efficiency, 500 MW of local solar, and base case electrification of the transportation sector. Case 5 represents the high case, and includes pre- contract end date coal replacement, a 50 percent RPS by 2030, advanced energy efficiency, 1,200 MW of local solar, and high electrification of the transportation sector (100 percent over the base).

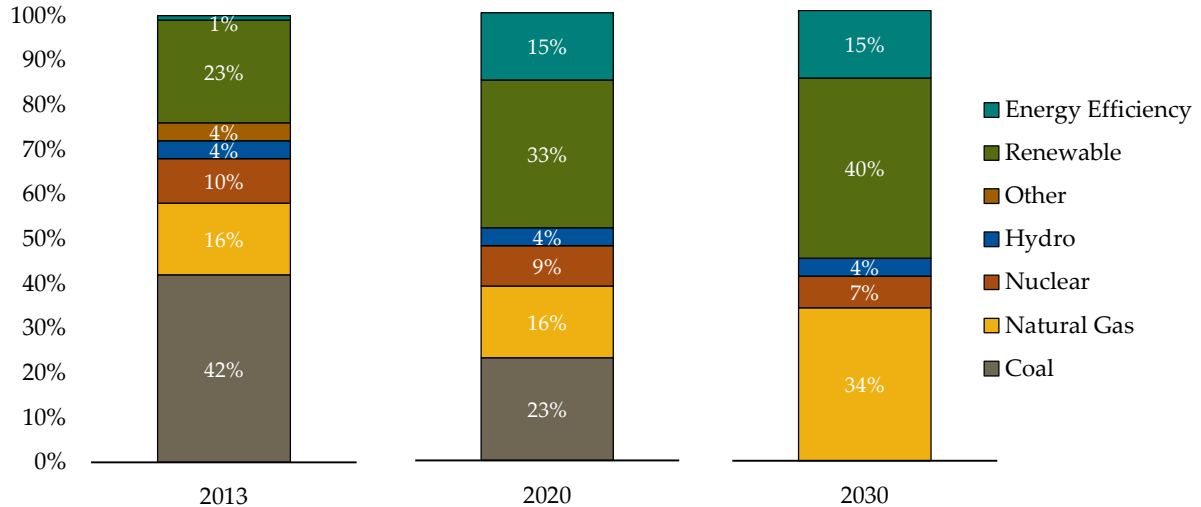
### 3.2.1.4 The Recommended Strategic Case

The Recommended Strategic Case is the preferred resource scenario selected by the Department as the basis for LADWP’s supply and demand-side resource plans and programs going forward that meets its goals. Navigant comprehensively evaluated the 2014 Recommended Strategic Case, which comprises the scenarios in the following table and produces the future energy mix shown in Table 3-2.

**Table 3-2. The 2014 IRP Recommended Case**

Attribute	Case	Year
Coal Replacement	Navajo early divestiture	2015
	IPP early replacement	2025
Energy Efficiency	15 percent less electricity usage than FY 2010; “advanced”	2020
RPS	25 percent of retail electricity sales	2016
	33 percent of retail electricity sales	2020
	40 percent of retail electricity sales	2030
Local Solar	800 MW	2023
Transportation Electrification	2,344 GWh for 580,000 electric vehicles; “high”	2030
Demand Response	506 MW	2026
Energy Storage	178 MW	2021

**Figure 3-1. LADWP 2014 IRP Energy Mix**



Source: Navigant analysis of LADWP 2015 Briefing Book

In terms of its overall resource mix, LADWP is ahead of California for renewable energy but still relies heavily on coal for its power supply. This sets it apart from the rest of the State of California and maintains a long reliance on coal. Cost and contractual issues are the primary constraints driving this continued dependence. However, by 2030 LADWP’s power portfolio is expected to eliminate coal and more closely resemble California’s. The 2030 resource mix reasonably represents LADWP’s interest in becoming a leader in clean energy without deviating dramatically from the rest of the state.

Navigant evaluated the components of the Department’s Recommended Strategic Case in terms of approach, current status, and future outlook.

**Greenhouse Gas Emissions:**

<b>Approach</b>	Multiple activities contribute to the reduction of GHG emissions, including eliminating coal, repowering in-basin natural gas plants, and increasing renewables. The Recommended Strategic Case is designed to make progress towards the required 80 percent reduction by 2050.
<b>Status</b>	In 2014, LADWP’s GHG emissions were 23 percent below 1990 levels.
<b>Outlook</b>	LADWP expects emissions to be 55 percent below 1990 levels by 2025 and 60 percent by 2030 (potentially, 74 percent by 2030 after including forecasted transportation emissions savings from fuel switching/electrification). LADWP has not yet defined a strategy to reach 80 percent. Although this is beyond the timeframe of the 2014 IRP, it is important to prepare a complete plan in the future.

**Once-Through Cooling and Repowering:**

<b>Approach</b>	LADWP is required to eliminate OTC from its coastal power plants by 2029, which is discussed in the 2014 IRP.
<b>Status</b>	The Department reports being on schedule: Haynes Units 5 and 6 began commercial operation in June 2013, and Scattergood 3 broke ground in June 2013 and is expected to reach substantial completion by December 30, 2015.
<b>Outlook</b>	LADWP appears to have made good progress on OTC and repowering. In the past two years the repowering program has been relatively in line with its overall budget. The current Scattergood

	Unit 3 project appears to be on scheduled based on monthly reports highlighting completed work and remaining work items by activity.
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### Coal Replacement:

<b>Approach</b>	LADWP is required to let expire contracts for power that does not meet an emissions standard. In the 2014 IRP, LADWP examined cases for divesting from and replacing two coal plants by 2015 and 2025 respectively, before contracts end.
<b>Status</b>	LADWP finalized the sale of Navajo Generating Station in 2015 and secured power from Apex Generating Station (natural gas) as part of the replacement. The agreement to repower the Intermountain Power Project (IPP) with natural gas has been delayed by other participants but is expected by the end of 2015, and LADWP still intends to eliminate coal in 2025.
<b>Outlook</b>	Repowering IPP two years before the contract ends is relatively conservative in terms of California's resource portfolio (largely divested from coal today), but may still be a challenge for LADWP because of difficulties coordinating natural gas repowering among various participants and because the Department estimates an approximately 10-year lead time for alternate replacement projects requiring new approvals, partners, and transmission assets. Having successfully sold Navajo, LADWP should now focus on other solutions for IPP.

### Energy Efficiency:

<b>Approach</b>	The 2013 Energy Efficiency Potential Study determined that 15 percent energy savings is feasible and cost-effective by 2020; this was adopted as the Recommended Strategic Case.
<b>Status</b>	In FY 2013-14 LADWP achieved 3.7 percent energy savings and has improved year-over-year since 2012. The Department has struggled with staffing and contracting and has not spent its program budget in recent years; however, it has been closing the gap by adjusting estimates and improving spending towards energy efficiency programs in FY 2013-14 and 2014-15.
<b>Outlook</b>	The current energy efficiency portfolio is cost-effective and has a business plan through 2020, in which programs collectively meet energy and societal goals. The Efficiency Solutions group has improved energy efficiency performance, but going from 3.7 percent to 15 percent by 2020 will require a serious commitment by the Department for additional staffing, procurement, and project management support. To date, LADWP has no energy efficiency goals or estimates beyond 2020 but plans to update the potential study and adopt goals in line with SB 350.

### Renewable Portfolio Standard:

<b>Approach</b>	LADWP plans to meet the required 33 percent RPS in 2020 and its voluntary (at the time of the 2014 IRP) 40 percent RPS in 2030 with solar PV, wind, and geothermal energy. Renewable wholesale purchases are expected to decrease. Replacing coal and increasing energy efficiency also contribute to the RPS.
<b>Status</b>	LADWP achieved 20 percent RPS in 2010 and has maintained this level by relying in part on wholesale renewable energy purchases and installed wind projects. Several large-scale solar PV projects have been recently completed or are under construction, but the Department has significantly underspent its capital budget in the past two years.
<b>Outlook</b>	Staff report that LADWP is on track to meet the 33 percent RPS by 2020. Notably, however, Senate Bill 350 increased the 2030 RPS to 50 percent which will pose additional challenges. In particular, the reliability impacts of such a high penetration of renewables are not yet fully understood. LADWP is in the process of studying these impacts and should place a high priority on finishing these studies and implementing any recommendations that result—this is critical to ensure system reliability and would follow best practice to closely link resource planning and

	asset management. Future plans and funding for RPS projects should be tied to the findings of these studies and the constraints identified, to ensure an integrated approach.
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**Local Solar:**

<b>Approach</b>	LADWP offers a Solar Incentive Program for customer net-metered solar, a 100 MW feed-in tariff Set Pricing Program (FiT 100), and a 50 MW feed-in tariff Competitive Pricing Program (FiT 50). It plans to offer a 300 MW feed-in tariff to reach 800 MW of local solar by 2023. LADWP is also developing a new Community Solar Program, which has not yet begun.
<b>Status</b>	Customer net-metered solar (via the Solar Incentive Program) is roughly on track with 143 MW installed. The FiT 100 has suffered from significant processing times and wait list cancellations, and although it is on the final allocation, has only installed 7.1 MW.
<b>Outlook</b>	Because LADWP has completed only 7.1 MW of FiT projects, it will be challenging for the Department to meet local solar targets on the timeline outlined in the 2014 IRP (2023); however, some process improvements have been made and the Department is re-assessing interest in the program after clearing inactive projects in the wait list. LADWP should continue to focus on program improvements to attract participants (including re-evaluating pricing) and project management support as needed to manage the ramp-up to the larger FiT.

**Electrification of the Transportation Sector:**

<b>Approach</b>	LADWP modified the California Energy Commission’s electric vehicle forecast to offer three cases in the 2014 IRP (base, medium, and high); the Advisory Committee selected the high case.
<b>Status</b>	LADWP continues efforts to support its preferred electrification case through rebates and physical charging infrastructure. The Charge Up LA! Home, Work, and On the Go program offers rebates for residential and commercial chargers and the Department has installed and retrofitted over 300 chargers on City property and is in the process of installing DC fast chargers around the city.
<b>Outlook</b>	In 2014, Los Angeles had 11,000 electric vehicles of the 118,000 in California. The high forecast is dramatically above this number but agrees with several third-party forecasts. LADWP’s current efforts only indirectly support long-term electric vehicle integration goals, so to move toward its aggressive target, the Department must create a comprehensive plan and rate design to incentivize electric vehicle charging and integrate electric vehicles with the grid.

**Demand Response:**

<b>Approach</b>	LADWP created a detailed Demand Response Strategic Implementation Plan in 2013 which is featured in the 2014 IRP. The Department has begun its demand response Pilot I program for CII Curtailable Load and will implement Automated Demand Response in 2016.
<b>Status</b>	The first pilot program of the Plan is underway and reported to be on track.
<b>Outlook</b>	Pilot 2 is scheduled to roll out in 2016 and Pilot 3 in 2017. LADWP should report on program metrics and consider revising incentives and including an equipment installation incentive to encourage enough participation to meet its relatively aggressive goals.

**Energy Storage:**

<b>Approach</b>	LADWP developed an Energy Storage Development Plan to procure energy storage by the state mandated dates of 2016 and 2021. The Department calculated energy storage targets using two approaches, one for selected locations and the other for the entire power system.
<b>Status</b>	An expansion to pumped storage at the Castaic Power Plant was completed in 2013 and a 1 MW LADWP-sited storage system was completed in June 2015.

<b>Outlook</b>	Scheduled projects include thermal energy storage at Valley and Apex Generating Stations, battery energy storage at several utility-scale solar PV projects, battery energy storage on the distribution system, and customer-sited thermal energy storage (LAX and large customers). At the time of this Survey, construction has not started except for the 1 MW system at the John Ferraro Building. Other projects are scheduled to be completed from 2017 to 2020.
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**Smart Grid:**

<b>Approach</b>	LADWP established a Smart Grid Investment Program in 2013 with 12 planned projects over the next 10 years, and is participating in the Smart Grid Regional Demonstration Program.
<b>Status</b>	The Department has installed 51,000 smart meters in three communities in Los Angeles.
<b>Outlook</b>	Advanced Metering Infrastructure is key for a number of other smart grid projects but it is unclear how LADWP intends to proceed at scale. LADWP should present its plan such that progress can be reported on a set timeline with milestones and metrics.

**3.2.2 Conclusions**

LADWP’s 2014 IRP is a sound planning document based on Navigant’s assessment of goals against regulatory mandates and policy objectives and the comparison of planning and modeling procedures to industry practices. The Recommended Strategic Case is a strong vision for the Department’s future resource portfolio and LADWP has achieved a number of key accomplishments, including making significant progress towards eliminating OTC, increasing renewables, and replacing coal (the sale of Navajo Generating Station). Navigant considers the 2014 IRP to have established robust plans overall.

Certain programs do need further definition and refinement in future IRPs. For example, the plan to replace the coal-powered Intermountain Power Project (IPP) has encountered challenges due to contractual issues with other participants. After Navajo, LADWP must now take the opportunity to focus on IPP and make it a high priority to overcome these challenges with more creative replacement plans. Additionally, the Community Solar Program, demand response, and smart grid-related initiatives are early-stage programs that must be further developed. As they are, LADWP should actively communicate with stakeholders about the direction and status of the programs.

Despite the strength of the 2014 IRP as a planning document, implementation may prove to be a challenge. There are complex issues at the heart of LADWP’s renewable energy and grid modernization efforts which will require careful management by the Department and City. Potential issues include maintaining power system reliability with a high penetration of renewables; requiring additional staffing resources, contracting ability, and project management; and lacking clear project metrics and oversight tying performance to rates. These challenges pose significant risks to successful program execution.

The reliability impact of a high penetration of renewables is not yet fully understood. Goals for a high RPS and increased local solar are potentially at odds with the core objective to maintain power system reliability—at least, without careful implementation and specific, well-executed plans. The Department is currently studying this topic and will address it in more depth in the 2015 IRP update and 2016 IRP. LADWP must thoroughly understand distributed generation impacts on the reliability of the distribution system in particular, and undertake a cohesive planning effort with the PSRP. It is critical that any recommendations from these studies be implemented to ensure system operational reliability.

Most of the plans laid out in the 2014 IRP describe significant program ramp-ups over the next several years. This is also the case for the PSRP, which is discussed in the next section. However, the Department

has struggled with capital underspending, which is reportedly due to staffing, procurement and contracting issues. Several programs have failed to achieve annual targets in recent years. These trends are a concern for LADWP’s growth plans. Without sufficient support for struggling programs, there is little evidence the Department will be able to establish and maintain aggressive growth. Specifically, the Power System should meet needed staffing levels and adopt a more rigorous project management approach or hire a project management firm to support project contracting, execution, and tracking. Additionally, the Department would benefit from a review and redesign of its procurement practices. Navigant found proof of the ability to grow in the Efficiency Solutions group, which has increased staffing and spending towards the program budget—this should be emulated in other areas of the Department.

Capital program underspending is further complicated by uncoordinated reporting methods and the restatement of project and annual budgets. In a number of cases, Navigant observed a lack of clarity in reporting on program progress toward specific goals and around the use of leftover funds from underspent capital programs. Complete information on the whole lifecycle of a project, including comparisons to original budgets, is often not readily available. Because achieving the clean energy transformation will come at a cost and LADWP’s funding requirements will continue to increase, it is especially important to track program metrics on performance and spending. Tying progress and achievements to rates in some way would establish more transparency and accountability for the Power System’s budgets and plans. This would trigger more open discussions between the City and LADWP around program success and funding. For example, until the full cost of renewable integration is fully understood, power rates related to new renewable generation resources should be tied to the results of such studies and the strategies adopted and progress against them.

Based on these findings, Navigant makes the following recommendations. Some are already underway, but others will require additional attention and resources from the Department and City.

#### High Priority Recommendations

- Formalize current IRP practices and link the IRP more closely to rates, requiring by ordinance bi-annual written updates to be submitted to the rate-approving authority reporting on key performance metrics for IRP programs and goals. Establish specific milestones for programs to be reflected in the reported metrics. In this way, the IRP will remain an engineering document produced by the Power System but also be effectively leveraged for rate decisions.
- Prepare for a significantly higher level of activity and spending in capital programs by:
  1. Ensuring that Power System divisions have the necessary staffing and contracting resources. LADWP could benefit from adopting Navigant’s recommendation regarding the hiring processes made in the *Governance* chapter.
  2. Adopting a more sophisticated project management business discipline with project management specialists reporting more detailed and transparent project metrics to key stakeholders on a monthly basis. Enhance tools and processes to centrally and comprehensively manage programs through commissioning.



- Place a high priority on completing the renewable integration reliability studies and implement critical recommendations from these studies. The Department should continuously update these studies, assess the resulting impacts on the Power System, and identify potential policy changes. Each IRP should incorporate the latest results.

#### Medium Priority Recommendations

- Include additional IPP replacement scenarios and updated timelines in the next IRP. LADWP should conduct an in-depth assessment of alternative non-coal scenarios, evaluate pros and cons, and present its best proposed strategy for complete IPP replacement in the 2016 IRP.
- Form a new, longer-term energy efficiency goal now that there is guidance from SB 350. Coordinate IRP modeling efforts with the Efficiency Solutions group to improve energy efficiency estimates past 2020 over the timeframe of the IRP, backed by an updated Energy Efficiency Potential Study as needed.
- Continue to prioritize finalizing new customer-focused programs (community solar, demand response, and smart grid-related programs) and as they are developed and refined, actively communicate with and hold discussions among stakeholders. Regularly communicate costs and benefits, timelines, and program milestones and include updates in each IRP.
- Conduct an assessment of the solar feed-in tariff program and make changes to support installation targets. As part of this, analyze pricing and program attractiveness to participants as well as streamline the program with process improvements.
- Create a preliminary rate design to send price signals to customers with electric vehicles. LADWP's plan to eliminate renewable overgeneration issues with electric vehicle charging will require new rates that incentivize customers to align their vehicle charging time with peak output from renewable generation. IRPs should include this work as it develops.

#### Low Priority Recommendations

- Include additional sensitivity and risk analysis in IRP modeling beyond fuel price scenarios and the natural gas hedging program; specifically, incorporate a load forecast sensitivity analysis with high and low scenarios, a wholesale electricity price sensitivity analysis, hydroelectric generation risk scenarios based on water availability, and unplanned thermal outage risks.
- Add a scenario optimization model to the IRP process to determine the least-cost portfolio.
- Conduct an independent third-party review of the economics of the LADWP project ownership strategy for all generation resources to determine the most cost-effective approach. For example, assess LADWP-built utility-scale solar PV projects versus third-party PPAs.
- Establish a preliminary strategy in the next IRP to reduce GHG emissions fully 80 percent below 1990 levels by 2050 and refine this strategy during annual IRP updates as conditions change.

### ***3.3 Power Transmission and Distribution Infrastructure***

This chapter focuses primarily on LADWP’s asset management and the Power System Reliability Plan. LADWP, as it strives to make dramatic steps forward, is contending with aging infrastructure, sub-optimal contracting processes, a dysfunctional hiring and retention process, and budget pressures. Additionally, it must plan and manage the integration of increasing amounts of intermittent renewable generation resources and transformational technologies such as energy storage, electric vehicles, and other aspects of the smart grid. These challenges all put additional stress on the Department’s existing T&D assets and will require further investment. Addressing these challenges while maintaining safe and reliable power supply at competitive rates requires a robust asset management function in the Power System.

Asset management can be characterized as making the smartest decisions possible to achieve desired asset performance through sound maintenance, repair, and replacement programs while minimizing unwarranted costs from failing to maintain and optimize the asset portfolio.

Navigant assessed the Department’s T&D asset management function against industry best practice and stated objectives, identified gaps, and provided recommendations for improvement. Navigant leveraged its proprietary Asset Management Diagnostic Tool which explores 39 subject areas categorized in the following six asset management groups:

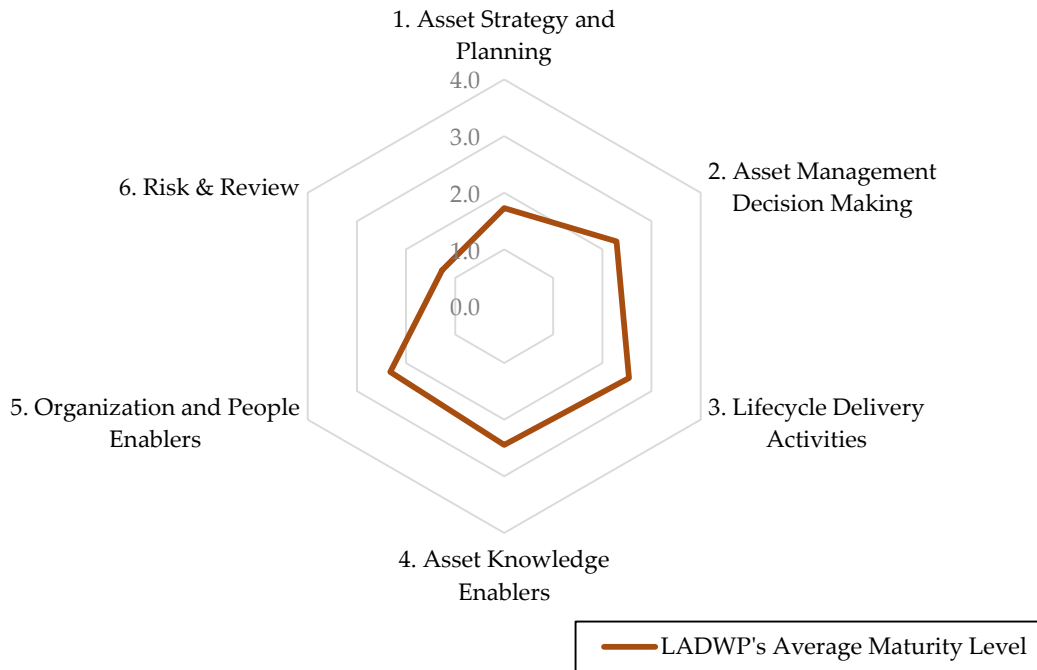
1. Asset Strategy and Planning
2. Asset Management Decision Making
3. Lifecycle Delivery Activities
4. Asset Knowledge Enablers
5. Organization and People Enablers
6. Risk and Review

The evaluation was conducted through a review of the 2013 Power System Reliability Program (PSRP) and 2014 Long-Term Transmission Assessment, and was supported by interviews with LADWP leadership and subject matter experts, supporting documents, and Navigant’s industry experience.

#### **3.3.1 Asset Management Diagnostics**

While not achieving what would be considered industry best practice, the Department’s T&D asset management function appears to be in generally line with other U.S. utilities and provides sufficient governance and direction for LADWP to maintain, replace, and repair its aging infrastructure, while addressing the key challenges it faces. Results from the Asset Management Diagnostic Tool are shown below.

**Figure 3-2. Assessment of LADWP's Maturity Level in Six Key Aspects of Asset Management**



One strength of the Department is the way the organization makes operational decisions relative to its assets. LADWP is very good at situational awareness as it relates to the condition of its assets and managing operational risk, and over the years has been implementing system enhancements to achieve these improvements. LADWP also appropriately forecasts the demand that will be placed on T&D assets. The Department's planning process is mature and conservative, and takes into account all aspects of the business from generation to delivery.

One key achievement of the Department was the development of the 2013 PSRP. The PSRP outlines the Department's plan for the management of its generation, transmission, and distribution assets, with the objective of maintaining a high level of electric power service reliability and complying with North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) standards. Navigant's review of the PSRP shows that it represents a comprehensive plan for the management of the Department's generation, substation, transmission, and distribution assets, is well aligned with the Department's stated objectives and to the organizational structure, and has been communicated well to stakeholders.

Finally, the Department appears to have a number of appropriate asset management processes in place. Areas addressed by LADWP's asset management processes include:

- Governance of asset maintenance and operation during the delivery phase of the life cycle.
- Maintenance and calibration of critical tools.
- Follow-up regarding failure or unexpected operation of assets.

Navigant also identified a number of areas of improvement requiring immediate attention. Key areas of improvement include the need for a formal asset management and continuous improvement framework, improvements to asset life estimates, the implementation of an outsourcing strategy, changes to the

procurement process, and the development of a robust plan to address expected staff attrition. In particular:

- The Department has not formalized its asset management strategy. Furthermore, while risk is considered throughout the PSRP (mostly from a traditional utility perspective) risk and risk mitigation are not well documented in a manner consistent with best practices. LADWP should develop an asset management strategy document and implement a risk management framework, along with risk registers and mapping risk to objectives and mitigations across all areas of its asset management function.
- LADWP is very much like many utilities in that the asset management function has developed organically over time. Although this generally serves LADWP well, it often does not include many of the more structured approaches of asset management to risk management and optimization. For example, the Department often documents corrective and preventive actions; however, in many cases the process is ad-hoc. In addition, there has not been a formal process for asset management function audits. LADWP should develop a more formal, best practice asset management framework such as ISO 55000 and embed in it a structured continuous improvement process.
- The Department has a number of asset management processes in place; however, some may not be fully documented. LADWP should formalize its processes in order to consistently perform and capture institutional knowledge in a time of a rapidly changing workforce resources.
- LADWP's asset life estimates are largely based on age. Some of the age models, while sensible, do not align with best practice and may understate the expected lifespan of assets. Navigant recommends that LADWP evolve towards accurate end-of-life standards based on asset condition monitoring and improved end-of-life estimating techniques, including the development of asset health indices for each asset class.
- The PSRP does not fully consider the future requirements of assets, development of technology, or implementation of smart grid devices on the system. LADWP should assess the impact of changing smart grid technologies and include the implementation of those challenges in a roadmap that considers the requirements and timelines for updating the SCADA, OMS, EMS, and DMS systems, and outlines that implementation strategies for online monitoring and distribution automation. The impacts on workforce and skills requirements should also be considered in the roadmap.
- While the PSRP will help LADWP better manage the middle and end-of-life of assets, too much emphasis is put on the lowest initial asset cost rather than whole life cycle cost. This approach is partly due to the characteristics of LADWP's procurement process, which focuses on the selection of the lowest cost bid at the time of acquisition as opposed to the lowest cost bid for the life cycle of the asset. This is a common issue for public power agencies and it tends to raise a utility's overall cost structure over time. Best practice recommends the implementation of a procurement process for "lowest evaluated cost" which properly considers the entire life cycle costs, including additional maintenance, life expectancy, spare parts requirements, interchangeability of parts, and other potentially significant costs.

- While LADWP has had success in its current limited outsourcing, neither the PSRP nor the Human Resources Plan incorporates a stated contracting strategy. LADWP should define a stated outsourcing strategy as part of its workforce resource planning.
- Much of the Department staff’s operational knowledge is gained through experience and training. With the expected large staff attrition, LADWP needs to formalize its processes and focus on capturing the institutional knowledge of retiring employees.
- LADWP staff that were interviewed are experienced and competent. Employees appear to understand their roles and responsibilities, and expectations are clearly communicated. However, most levels at the Department are governed by seniority through the civil service system; therefore, it is not always clear that there are opportunities to introduce new skills and approaches from outside the company so that the most qualified person holds each position. LADWP should attempt to counter this issue through training, testing, and ongoing performance feedback. And since most levels of the company are essentially closed systems, LADWP should also focus on exposing its employees to industry changes and bringing in outside influences when possible.
- More attention on LADWP’s implementation of the PSRP may be required. Even though it is a strong planning document supported by experienced staff, it appears to have been constrained by other factors that led to underspending and underperforming on the capital program. Like other important programs, the City should consider staging rates on PSRP achievements.

The implementation of these recommendations will require dedication and focus from the Department and possibly a culture change. However, as mentioned previously, LADWP is facing a number of challenges and addressing these challenges while minimizing the associated costs to ratepayers will require a transition to the implementation of best practices in asset management.

### 3.3.2 PSRP Performance

Despite the PSRP’s merits as a strong planning document, Navigant was provided feedback and found evidence of underspending on the capital program. This is a critical issue particularly because managing the PSRP is essential to advancement towards the Recommended Strategic Case in the 2014 IRP, as the Power System must be able to support a high penetration of renewables, distributed generation, storage, demand response, and smart grid technologies.

Navigant finds that in FY 2012-13, the PSRP spent of 72.7 percent of its budget; in FY 2013-14, the PSRP spent 69.8 percent of its budget; and in FY 2014-15, the PSRP spent 87.4 percent of its budget (table below). FY 2014-15 spending was \$318.2 million, which is also a higher dollar amount than the two previous fiscal years. While this is a positive development, Navigant recommends giving additional attention to PSRP performance going forward—overall, actual expenditures were only 77 percent of the approved budget for the three-year period. Notably, the Transmission program spent only 56 percent of its approved budget over the period.

**Table 3-3. LADWP PSRP Capital Budget and Actuals (\$ thousand)**

Program	FY 12-13 Approved	FY 12-13 Actual	FY 13-14 Approved	FY 13-14 Actual	FY 14-15 Approved	FY 14-15 Actual	% Variance
Generation	15,280	18,317	14,284	16,772	1,358	2,175	121%
Distribution	149,874	110,129	163,774	122,629	166,208	180,782	86%
Substation	74,830	66,143	73,432	55,612	87,092	58,125	76%
Transmission	39,385	13,604	97,058	51,5644	94,900	64,9610	56%
Info Appl. Sys.	19,514	9,152	18,629	9,873	14,658	12,145	59%
<b>Total</b>	<b>298,882</b>	<b>217,345</b>	<b>367,177</b>	<b>256,451</b>	<b>364,216</b>	<b>318,189</b>	<b>77%</b>

Source: Power Capital Budget and Actuals, August 19, 2015.

It also appears that the largest underspent items are related to contracting services and the purchase of materials (procurement). Specifically, 15 percent of the budget for construction services was spent over the three-year period and 46 percent of the budget for materials and supplies. The program also spent only 81 percent of its regular labor budget. These items highlight LADWP's challenges in hiring contractors and inefficiencies in procurement processes, leading to delays.

The Department should report more clearly to the Board on progress against well-defined milestones and outline a plan to ramp up program implementation effectively. This will likely require additional resource planning, including improvements to staffing and procurement processes which were reported to be obstacles. Navigant believes a further investigation of the actual expenditures on PSRP against authorized amounts from the City Council should be conducted in the upcoming rate review. Further examination of how underspent PSRP funds were reallocated is a key issue going forward to ensure funds allocated to specific programs are spent on those programs.

## 4. Water Infrastructure

### 4.1 Objectives & Approach

This chapter presents Navigant’s assessment of the Department’s water infrastructure. Although LADWP’s Water System Organization (WSO) is nationally known for excellence, water infrastructure has become an important focus area as the WSO faces a number of challenges that will require significant capital and operations and maintenance (O&M) expenditures related to the maintenance and renewal of its aging infrastructure and compliance with stringent regulatory mandates. These are urgent issues that are confronting many water utilities in the United States. The scope of the 2015 IEA primarily focuses on assessing the Department’s plans with regards to:

- Water Supply and Storage:** While LADWP’s existing mix of water supplies has been a key factor in the Department’s ability to provide its ratepayers with high quality, reliable, and cost competitive water, there is a need for significant changes. LADWP has been heavily relying on water purchases from the Metropolitan Water District (MWD) for many years. MWD water represents the second most expensive water source in California and its pricing is outside the direct control of the Department. The current drought further exposes the Department to MWD’s high costs, as supply of lower cost water from the Los Angeles Aqueduct (LAA) has been very limited. LADWP plans to address these issues and reduce its reliance on MWD water through an increase in local water supply. In particular, the Department’s plan includes increased water supply from stormwater capture, groundwater, recycled water, and conservation.
- Water Distribution Infrastructure:** The WSO is contending with severely aging infrastructure. A significant number of its physical assets, including mainlines, trunk lines and large valves have already reached the end of their useful life. Ensuring system reliability in the current context of rapidly aging infrastructure requires a robust asset management function supported by efficient and effective processes, adequate staffing levels, and up to date technology.

Navigant’s review of LADWP’s water infrastructure is primarily based on insights gathered from interviews, industry experience, and supporting documentation provided by the Department. This chapter is organized according to the two main topic areas above, with an additional section for the discussion of the WSO’s overall water strategy.

### 4.2 Water Supply and Storage

For most California water utilities, the Urban Water Management Plan (UWMP) is the primary water resources planning document, and includes the utility’s demand and water supply forecasts. Since LADWP is in the midst of developing the 2015 iteration of its UWMP, Navigant had to rely on the 2010 version of the UWMP and additional documentation, as well as insights gathered from interviews with key personnel to review of the Department’s Water Supply and Storage plans.

Given the current drought conditions facing LADWP’s service area and most of California, Navigant evaluated the Department’s demand forecasts against what is currently the most influential water demand driver: conservation. While further analysis would be required to fully vet the Department’s

demand forecasts once the 2015 UWMP is released, Navigant’s review shows that LADWP’s water supply projections appear to be compliant with existing conservation mandates.

Similarly, LADWP’s water supply, storage and demand management strategies appear to be robust and sound. The WSO is doing a commendable job to maintain and enhance its water supplies, and achieve the City’s and the Department’s shared overarching goals of increasing local water supply, reducing LADWP’s reliance on water purchases from MWD, and expanding its conservation efforts. In addition, given that long-term demands may decline due to a reduced per capita demand, there appears to be no need to pursue other, more costly water supply options such as seawater desalination.

However, the Mayor’s goal to reduce water imports by 50 percent may prove challenging to achieve during dry years. While achieving this goal during normal and wet years is very likely, an analysis completed by Navigant shows that cutting in half MWD water purchases by 2025 during dry years (using FY 2014 as the baseline) would require an 850 percent increase in water supply from conservation and recycled water compared to FY2014-15 levels to meet the supply demand. Such an increase in conservation and usage of recycled water is not supported by the Department’s current plans.

Finally, this chapter includes a discussion on the potential impact of climate change on LADWP’s water supply. The WSO has completed an analysis of the potential climate change impact on the LAA System in 2011 showing that impacts may not be significant enough to adjust projected supply estimates from the LAA in the short and medium-term. However, the impact of climate change may be non-negligible beyond the 2040 planning horizon and a discussion addressing this issue is expected to be included in the 2015 UWMP.

### ***4.3 Water Distribution Infrastructure***

#### **4.3.1 Asset Management Program**

##### ***4.3.1.1 Asset Management Strategy***

Over the last several years, the WSO has made significant improvements to its asset management function. The creation of an Asset Management group within Water Engineering Technical Services (WETS) was a major step, as has been the drafting of several asset management plans for critical asset classes. Additionally, the WSO recently initiated a training program that seems to be increasing support across the organization for a more comprehensive approach to asset management. Several days of asset management training were conducted for WSO managers and the training was quite detailed and discussed a number of specific steps that need to be taken to implement a comprehensive asset management function.

The WSO’s efforts to dive into the details of asset management represent great progress from the Department. However, the WSO lacks a stated asset management strategy or policy, and there is limited to no agreement among the senior staff as to the need for a formalized asset management function. Further, asset management objectives and goals are not clearly stated for all asset classes.

Over the last several years, there has been a significant international effort to develop standards for asset management programs. The result of this effort is the recent approval of International Standards Organization (ISO) 55000, 55001, and 55002. These standards provide excellent guidance on the essential



elements of an asset management program. The WSO should consider developing a strategic asset management plan consistent with these standards. Many of the elements are already in place, and with the full involvement and support of the WSO's top management, this effort could be completed rapidly. Upon completion, the Department could potentially use the WSO's asset management plan as a template for the Power System and Joint Services.

When developing its asset management strategy, the WSO should address the following issues:

- While there are a number of examples that demonstrate consideration of continuous improvement from the WSO, there is no formalized process to ensure that continuous improvement is reflected in the WSO's asset management objectives and plans.
- Moving forward, one of the key asset management strategic policies that the WSO should consider is defining levels of service for each asset class. Even if the target level of service is not currently achievable, the asset management plan for a particular asset class should set a timeline to achieve that level of service and establish a program to meet the objective. Level of service definitions will drive action and will help define and allocate the resources required to meet the objective.
- There is some recognition in the WSO that asset management is tied to risk. The mainline replacement prioritization methodology constitutes a good example. However, there are other asset classes, such as pump stations and regulator stations for which limited risk evaluations have been performed. Risk assessment appears to be incomplete and inconsistent across the WSO's asset classes. Best practice would include a more formal risk assessment framework applied to all asset classes and driven by the asset management strategy.

#### ***4.3.1.2 Asset Management Plans***

As mentioned previously, the WSO has made substantial progress in drafting asset management plans for a number of critically important asset classes. However, all of these asset management plans are in draft form, despite some dating back to 2010. These plans should be finalized to ensure that their findings are formally considered in future asset renewal strategies.

In addition, there are a number of asset classes for which asset management plans have not been developed. The WSO should consider developing plans for these assets to effectively manage water infrastructure priorities.

#### ***4.3.1.3 Condition Assessments***

Given the aging infrastructure of the WSO, it is critical that the condition of the assets be regularly and comprehensively assessed. The WSO supplied Navigant with several asset management plans that discuss the condition of various assets; however, these reports do not constitute complete condition assessments, as they do not include critical data such as actual field condition information, or, for larger asset such as major trunk lines, findings from non-destructive inspections. Further, the WSO does not seem to have a consistent approach to condition assessment, and there is limited field data to support conclusions for a robust asset renewal strategy.

It is critical that the WSO develop comprehensive condition assessments for all its asset classes and regularly update them. The Department should use qualified contractors/consultants to support this

effort as Navigant found that there are currently insufficient staff resources to complete these projects in a timely manner.

Asset condition data retention appears to be another challenge. Interviews have revealed that the WSO's staff has a solid understanding of the condition of many of the major water system assets. However, this information does not appear to have been fully documented and many of the experienced staff are currently or soon to be eligible for retirement. LADWP should continue to formalize its processes to capture the institutional knowledge of retiring employees. Collecting this information and data through additional field investigations will be more costly to the WSO than ensuring this knowledge does not leave the Department when the experienced staff depart.

#### **4.3.1.4 Emergency Preparedness<sup>5</sup>**

The WSO has emergency response and continuity of operations plans in place and has proven to be very effective and efficient in responding to emergency leaks and breaks. However, critical details appear to be missing from the plans, training is incomplete—especially in Incident Command System (ICS)—and terminology and responsibilities are not universally understood. Further, while the WSO has shared that some emergency drills have been completed, they were limited in scope and purpose. Combined, these issues may cause confusion when responding to major incidents, such as a major earthquake.

#### **4.3.2 Current State of LADWP's Water Infrastructure**

Utilities across the United States are facing increasingly aging infrastructure replacement needs as many physical assets reach the end of their useful lives. Although LADWP has yet to feel the full impact of water infrastructure failures, the UCLA trunk line break serves as one example of the damage that may occur in the future. To address this challenge, the Department has significantly ramped up its asset renewal<sup>6</sup> efforts and the recently proposed rate increase is based primarily on funding plans for a substantial acceleration of these efforts.

For instance, the WSO's current plan is to double its mainline (pipelines with diameters equal or smaller than 20 inches, excluding service lines) renewal rate from 150,000 feet per year to 300,000 feet per year. A replacement rate of 300,000 feet per year would reduce the System's replacement rate from a 235 to a 120-year cycle—which brings the rate closer to the average useful life for mainlines which ranges from 60 to 120 years. While this increase will go a long way toward reducing the projected amount of mainlines that will reach the end of their nominal useful life in the short-term, it will not be enough to address the challenges LADWP will be facing beyond 2020. At an annual renewal rate of 300,000 feet, the amount of pipe exceeding its useful life will nearly double within 15 years. If the proposed rate were to continue for decades, the amount of pipe exceeding its useful life would increase fivefold to approximately 8 million feet, or 23 percent of the total amount of mainline pipe.

Consequently, the risk of pipe failures and the WSO's ability to meet reasonable levels of service will be greatly affected. While representing a great improvement, it is clear that a mainline replacement rate of 300,000 feet per year will not be sufficient in the medium to long-term, and that additional investments in mainline replacement programs will be required.

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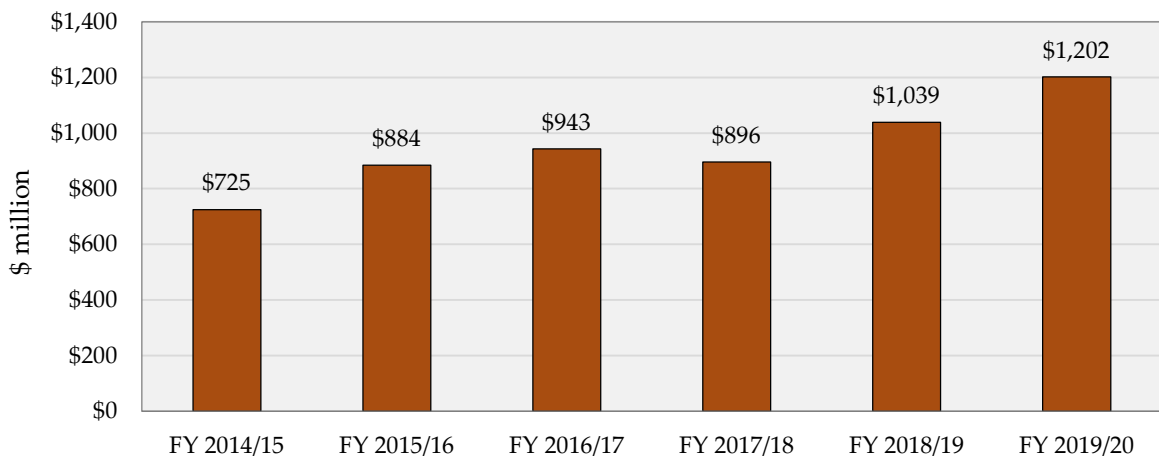
<sup>5</sup> This topic is addressed in detail in the *Emergency Preparedness* chapter of the IEA Survey.

<sup>6</sup> "Asset renewal" refers to any major repair, rehabilitation or replacement.

This recommendation also applies to large valves. The WSO’s current plan is to replace 5 large valves per year, which equates to a 460 year replacement cycle. Based on the nominal useful life of large valves that ranges from 50 to 100 years (depending on the type of valve and its particular application) this rate appears to be well below what is needed to maintain a reasonable replacement schedule. This concern was also shared by LADWP staff during interviews with the Navigant team.

Replacing LADWP’s aging infrastructure and ensuring system reliability will come at a cost to the ratepayers. According to the latest rate proposal, capital expenditures will increase from \$725 million in FY 2014-15 to over \$1.2 billion in FY 2019-20, representing a 66 percent increase.<sup>7</sup>

**Figure 4-1. Water System Capital Expenditures (FY14-15 – FY19-20)**



LADWP’s capital programs related to the renewal of its water infrastructure are ambitious and costly, but needed. Overall, the Department has sound plans to move forward on these programs but Navigant has concerns that it does not have the capacity to implement them—even though the WSO was able to spend 100 percent of its approved budget in FY 2014-15—due to expected significant attrition, difficulties in hiring new staff and contracting out, and inefficient procurement processes. It is critical that LADWP addresses these issues in the short-term. The Department should:

- In close collaboration with the City, identify and assess solutions to accelerate the hiring and selection process.
- Implement a broader and more dynamic outsourcing strategy as part of LADWP’s workforce resource planning. This strategy should be incorporated into the Department’s Human Resources Plan and operated as a high priority initiative with full support from City Management.
- Perform a comprehensive review and re-design of its procurement processes to increase efficiency and effectiveness, and to drive business process ownership and accountability.

<sup>7</sup> Water System Rate Action Report, Chapter 2: Introduction & Background, July 2015, Figure 22.

#### ***4.3.2.1 Advanced Metering Infrastructure***

The WSO lags behind other California utilities in its efforts to implement Advanced Metering Infrastructure (AMI), which includes remote meter reading capabilities. LADWP is in a position to combine both remote electric and water metering using a single AMI architecture; however, based on staff interviews, it appears the Power System is piloting AMI that does not currently have water metering capability. If the Power System moves ahead with this decision, this opportunity for integration and the associated implementation cost savings will be lost, unless the selected vendor develops a water metering capability. Navigant strongly recommends a combined implementation of AMI for the Water and Power Systems.

#### ***4.4 Water System Strategy***

Navigant observed several factors that may be limiting the WSO's ability to cost-effectively and efficiently respond to the challenges noted above. Chief among these is the lack of a single corporate strategic planning document guiding the WSO's efforts.

The WSO and the City have already developed a number of insightful strategic planning documents, including the 2008 Water Supply Action Plan, the 2009 Sustainability Plan, the One Water L.A. 2040 Plan and the 2014 pLAN. However, there is still no single, coherent Strategic Business Plan.

The existing strategic documents lay out strategies, principles, initiatives, and goals and objectives that currently drive the WSO. Taken together, these documents could provide a robust foundation for the WSO's Strategic Business Plan. However, most of the plans focus on water supply and water conservation, with limited attention paid to infrastructure. Given the current challenges related to infrastructure maintenance, renewal and enhancement, additional efforts should be devoted to developing a strategy that addresses infrastructure.

WSO leadership should initiate a process to create a Strategic Business Plan which can be started by combining and aligning many of the existing strategic documents and developing a strategy to drive infrastructure replacement efforts.

#### ***4.5 Conclusions***

This review of LADWP's water infrastructure has revealed that there are still a number of factors that may limit the WSO's ability to cost-effectively and efficiently respond to the challenges it faces. However, the WSO's overall approach to replacing, maintaining and repairing its aging infrastructure, and addressing the other challenges it faces appears to be robust and sound.

Navigant's major concerns are related to the expected mainline replacement rate, and the WSO's capacity to ramp up and implement its capital programs. This study shows that the proposed mainline renewal rate will not be sufficient in the medium to long-term, and that additional investments in mainline replacement programs will be required. Multiple factors led to the selection of the proposed replacement rate but one of the key objectives was to determine a renewal rate that would limit the required rate increase while still providing acceptable system reliability levels in the short-term. This strategy may not be in the best interest of the ratepayers in the medium and long-term as it may create a backlog of mainlines needing replacement that is not sustainable, which ultimately may lead to more leaks, additional repair costs, and even higher rates.

The expected significant attrition, existing difficulties in hiring new staff and contracting out, and inefficient procurement processes constitute the other top priority challenges the WSO should immediately address in order to be able to implement a significant ramp up of its capital programs.

Navigant's list of recommendations for improvement are included below. Some actions are already underway, but others will require additional attention and resources from the Department and City.

#### High Priority Recommendations

- Increase mainline and large valve renewal rates.
- In close collaboration with the City, identify and assess solutions to accelerate the hiring and selection process.
- Implement a broader and more dynamic outsourcing strategy as part of LADWP's workforce resource planning. This strategy should be incorporated into the Department's Human Resources Plan and operated as a high priority initiative with full support from City Management.
- Perform a comprehensive review and re-design of LADWP's procurement processes. Re-designed procurement processes should increase efficiency and effectiveness, and drive business process ownership and accountability.
- Continue to formalize the WSO's processes to capture the institutional knowledge of retiring employees.
- Create a single, coherent strategic business plan by combining and aligning many of the existing strategic documents already used by the WSO.
- Establish an asset management strategy and document it in a strategic asset management plan by leveraging best practice asset management framework such as ISO 55000. Specific consideration should be given to adopting structured continuous improvement and risk frameworks, defining levels of service for the WSO's assets, and including an overarching policy governing the repair, maintenance and replacement of all the WSO's asset classes.
- Develop emergency plans that are in line with best practice requirements and include the completion of emergency drills in response to major incidents, such as a major earthquake.

#### Medium Priority Recommendations

- Complete comprehensive condition assessment reports of all asset classes.
- Finalize asset management plans that are currently in draft form, and develop new plans for critical asset classes for which there is currently no plan.
- Integrate Power and Water System AMI.
- Address the impact of climate change on LADWP's water supply, and in particular the LAA.
- Develop processes and procedures that govern the implementation of asset management plans for all asset classes. These processes and procedures should be reviewed and updated on a regular basis.
- Continue to formalize and document the WSO's strategies, plans, processes and asset data.
- Incentivize the WSO's senior leadership to drive the implementation of a formalized asset management function, including the development of a formal asset management strategy.

#### Low Priority Recommendations

- Leverage Navigant's findings to improve failure analysis reports.
- Create a long term investment plan that extends beyond the 10 year capital planning horizon.

## 5. Governance

### 5.1 Objectives & Approach

An important addition to the scope of the 2015 IEA Survey is the topic of governance. Although this topic was not originally included in Navigant’s scope of work, stakeholder interviews made it clear that governance concerns are of great interest and deserve focused attention. Hence, the Joint Administrators authorized a chapter focused exclusively on the governance of LADWP.

A utility’s governance structure is defined as the framework that articulates policy, decision-making, and leadership roles within the utility and between the utility and key stakeholders. It is also the framework for operational and financial oversight and management. For the Department, adequate, efficient governance is critical to the successful execution of the Power and Water Systems’ strategic and operational plans and to the effectiveness of the Joint Systems. Critically, it defines the overall strategic and operational readiness of LADWP.

Navigant conducted an assessment of LADWP’s governance structure based on information from multiple interviews, peer research, a review of prior City initiatives and studies focused on improving LADWP’s governance, and our experience. To fully inform the discussion, we also reviewed alternative municipal utility governance structures to identify examples of existing structures that, if applied to LADWP, might resolve or alleviate some of the problematic effects of the current structure. Finally, we created a high-level process roadmap to facilitate further study and decision-making with short and long-term action recommendations.

The overarching goal of the governance chapter is to assist the City, and LADWP, and its customers on a path towards a governance structure with the following important characteristics:

- Clarity of leadership,
- Accountability,
- Transparency,
- Adequate oversight and controls,
- Consistency, and
- Efficiency.

Readers should note that during the course of the IEA Survey, City and Department stakeholders overwhelmingly expressed openness to different governance structures, indicating that now is the time to make a change.

### 5.2 Current Governance Structure

Governance of LADWP is shared among the Board of Water and Power Commissioners, the Mayor’s office, the City Council, and the City Attorney. The Controller, City Administrative Officer (CAO), and Chief Legislative Analyst (CLA) are also important stakeholders. The Mayor and City Council have the important responsibilities to appoint the General Manager and the Board and approve rates, respectively. The City Attorney provides legal counsel to LADWP and the City’s Personnel Department handles civil service workforce hiring. In turn, the Mayor’s office and City Council rely on legal and financial advisory services from the appointed offices of the CLA and CAO, both of whom therefore influence Department oversight and rate-setting. The City Controller is also responsible for oversight of

the City's departments through audits such as the IEA Survey effort. Finally, a relatively new department, the Office of Public Accountability (OPA), was established in 2011 to be an independent analyst of LADWP's rates. Among these positions, no single entity has enough insight into or authority over Department operations and finances to hold it fully accountable or effectively support utility best practices and long-term goals.

LADWP functions independently from the City of Los Angeles for most day-to-day operations. Business operations are under the direction of the General Manager, who is appointed by the Mayor and confirmed by City Council. The General Manager reports to a five-member, volunteer citizens Board of Water and Power Commissioners.

In addition to the various stakeholders across the City and within LADWP, the role of several unions must be considered when evaluating the current and future governance structure of the Department. With approximately 95 percent of its workforce covered by union agreements, the Department and City depends on strong ongoing relationships with union leadership. The LADWP workforce is dominated significantly by the IBEW Local 18, which represents approximately 90 percent of Department employees. The current relationship between the employee unions and the City has had mixed results, with no party feeling that trust and effectiveness are at the level desired by all stakeholders. This is not a union problem, where one side should change its behavior and not the other; rather, it is an opportunity for the City and the unions together to move towards a more productive relationship. To fully address governance issues and increase the agility and flexibility of LADWP as an organization, a partner-based model in which goal setting and decision-making are collaborative processes should be pursued. This must be accomplished within the appropriate context with the full involvement of union leadership.

### 5.3 Governance Challenges

Every stakeholder is dissatisfied with the status quo. While dissatisfaction is an important consideration, of even more concern is the financial and execution risk the City faces as a result of current governance issues. Navigant synthesized findings and feedback into the following governance challenges:

- **Decentralized City Authority:** As mentioned previously, there are several layers of governance including various highly political bodies which bring politics into all facets of LADWP. However, no single entity has enough insight into or authority over Department operations and finances to hold it fully accountable or effectively support best practices and long-term goals.
- **Inadequate Hiring Process:** Human Resources is one area in which the Department does not benefit from centralized City authority. The current hiring process does not meet the utility's need to be more responsive and nimble. Moreover, it does not adequately address the aging workforce challenge. It is cited as a major impediment to every program initiated by the Department and has a significant impact on basic operations. It is a critical issue that, if not addressed, could prevent the Department from meeting its goals.
- **Lack of External Reporting, Transparency, and Trust:** For many years, the Department has not sufficiently communicated consistent and reliable metrics on major programs and performance against goals to key decision makers in the City and to the public at large. Only when requesting rate increases or other financial decisions requiring City Council approval does the flow of information from LADWP increase. Failure to clearly communicate key performance indicators has created distrust and confusion among citizens and City leadership, who find the



Department’s operations and finances to be opaque. Without increased transparency through clear reporting, it will be difficult for LADWP to earn back the public trust and carry out its agenda. Particularly, rate-setting processes that are unsupported by clear information, appropriate financial practices, and open discussion are likely to be less efficient and less useful. LADWP has increased transparency into its strategic objectives over the past few years, particularly due to the improved Power Integrated Resource Plan and public outreach efforts, but significant progress is still needed—particularly in financial and key metric performance.

- **Decentralized Internal Authority:** Navigant also identified a lack of central authority and controls within LADWP, specifically with respect to finance, security, and emergency preparedness. Overall, LADWP would benefit from centralized internal controls that establish defensible decision-making processes and higher standards of accountability. In particular, the Department lacks appropriate, centralized oversight and reporting on budgets and the movement of funds between programs and projects within the Water and Power Systems.
- **Ambiguous Role of the Office of Public Accountability:** The OPA would benefit from further refinement of its mission. Currently, the OPA is in an independent advisory role without authority over the Department’s rate submissions. However, the OPA’s reporting line to the LADWP Board weakens its true independence. The office faces continuous political pressure from the Department, elected officials, and City Management. Hence, it is stuck in a “no man’s land” as it is neither a regulator nor a truly independent advisor. The City should—in concert with all involved parties—revise the OPA’s mission to clarify its authority and independence in the Charter. This may require the City to make a choice between a purely independent office focused on ratepayer priorities and an office with a staff oversight role to advise and inform City stakeholders.

#### *5.4 Past Studies and Progress*

By now, LADWP’s governance challenges are well-understood by City stakeholders and Department leadership. Various efforts to study and reform the governance of LADWP have been undertaken but met with limited success, which highlights the complexity of the challenge.

In 1999 at LADWP’s request, Rand Corporation undertook a broad governance study of the Department motivated by electricity deregulation and restructuring developments in California. Overall, the Rand study found LADWP’s governance structure to be “complex, divided, and cumbersome.” The study also offers several options for modifying the governance structure. The first option is to create a city-owned corporation, which is considered to be more flexible, efficient, and responsive than the existing structure. The second option is to create an independent city agency with a strong governing board, which is similarly considered to be more flexible and efficient. The third option would focus on streamlining approval processes and limit political involvement in business matters, but is considered to be the least effective solution of the three because it would maintain the existing structure. Since the report was issued, none of the options were adopted by the City.

In the 2009 IEA Survey, PA Consulting found that the governance and decision-making process in place is not adequate to successfully address the Department’s “mission critical” decisions. The governance framework does not facilitate efficient decision-making and clouds accountability for key decisions

among a variety of stakeholders. This finding is closely aligned with the Rand study; however, the 2009 IEA Survey similarly does not appear to have provided sufficient stimulus to act.

In early 2010, City Council introduced a series of governance reform motions proposing the creation of a Ratepayer Advocate/Inspector General position and several other changes to LADWP's governance, as a result of a conflict between the Council and the Department regarding proposed modifications to the Energy Cost Adjustment Factor (ECAAF) component of utility rates. The ultimate result of this process was the creation of the Office of Public Accountability with the Ratepayer Advocate and new budget and City Transfer reporting requirements. Several motions also suggested the re-composition of the Board of Water and Power Commissioners, but this was the most controversial governance change and did not make it onto the ballot. Because two motions were passed, this process was a moderate success.

Finally, in 2013 the City Council President requested the 2020 Commission to study and report on fiscal stability and job growth in Los Angeles. Like previous studies, the 2020 Commission found that LADWP is subject to too much political interference and, as a consequence, high leadership turnover. The 2020 Commission recommended creating a Los Angeles Utility Rate Commission to be an independent regulator and the ultimate rate-setting authority for the utility; however, this recommendation is not currently advancing through the City Council committee hearing process.

## ***5.5 Review of Alternative Governance Structures***

To identify examples of governance structure options for LADWP, Navigant reviewed the governance arrangements of other U.S. municipal utilities. To synthesize our findings, we grouped the case studies into three general forms of governance: elected board governance, city council governance, and appointed board governance. We also analyzed the strengths and weaknesses of these structures in the context of LADWP's applicable governance challenges; specifically, decentralized city authority and the lack of external reporting, trust, and transparency.

### **5.5.1 Elected Board Governance**

Sacramento Municipal Utility District (SMUD) is a good example of an elected board governance structure as a municipal utility district. SMUD is governed by a seven-member Board of Directors who are elected by customers from each of the seven geographic areas within the company's service area. The Board of Directors appoints the General Manager, approves the budget, and approves rate changes. To financially support the local government, SMUD customers in the City of Sacramento pay a utility tax of 7.5 percent and customers in the unincorporated area of Sacramento County pay a tax of 2.5 percent.

The potential strengths and weaknesses of an elected board governance structure are highlighted by SMUD's experience. According to interviews, in 2003-2004 the utility was struggling with a number of governance challenges, despite structurally being the same municipal utility district as today. However, at the time the board was becoming too tied up in the details of decision-making processes, particularly in areas where it did not have sufficient expertise. Because this was becoming a significant burden on leadership, SMUD initiated an intensive two-year process to establish clear policy, roles, and expectations for the utility district. At the end of the two years, SMUD had established a strategic direction defined by a number of policies which appear to have been very effective. Overall, stakeholders have expressed high satisfaction with the current SMUD governance model.

Based on the apparent success of SMUD, the municipal utility district model—supported by effective policies—may have the most potential to de-politicize the governance structure by distancing the utility from the primary political bodies and allowing it to function as an independent business organization, while directly serving the citizens of Los Angeles and maintaining financial support for the city.

**Table 5-1. Elected Board Structure: Resolution of Governance Challenges**

Governance Challenges	Decentralized City Authority	Lack of External Reporting, Trust, and Transparency
<i>Does Address</i>	<ul style="list-style-type: none"> <li>• Elected board acts as a clear central authority</li> <li>• Other City politics no longer relate directly to the utility</li> <li>• Focused attention on utility matters at all times</li> <li>• More shared responsibility between the board and utility executives</li> </ul>	<ul style="list-style-type: none"> <li>• Direct reporting channel established between utility leadership and board</li> <li>• Candidate qualifications impact election results, encouraging nominees with relevant expertise</li> <li>• Decision making is likely to be based on firm business principles</li> </ul>
<i>Does Not Address</i>	<ul style="list-style-type: none"> <li>• Opportunity for politicization around election of board members</li> <li>• Opportunity for too much board involvement in utility operations (though this could be mitigated by well-defined policies)</li> </ul>	<ul style="list-style-type: none"> <li>• Elected board members may have limited experience (though this could be mitigated by training and a dedicated advisory staff)</li> <li>• Potential for controversial elections to lead to public distrust</li> </ul>

### 5.5.2 City Council Governance

Seattle City Light (SCL), Austin Energy, and Colorado Springs Utilities (CSU) are all examples of the city council governance structure, in which the utility reports directly to council or, in the case of CSU, to a board solely comprising council members. In theory, the city council model of governance provides clarity of leadership by simplifying and centralizing control; however, the case study utilities highlight several weaknesses associated with city council governance.

For example, an expert panel in 2006 noted that the city council model leaves SCL vulnerable to “political winds.” For Austin Energy, the Electric Utility Commission recommended the Austin City Council transfer management and control of the utility to an independent board of trustees in order to increase transparency and accountability, improve efficiency, clarify leadership, remove political interference, and provide a mechanism by which all Austin Energy customers would be represented. Colorado Springs Utilities has faced even more scrutiny. Since becoming an enterprise of the municipal government in 1993, four separate studies have examined a change in governance structure, each recommending CSU establish an independent board of directors. Despite recommendations, SCL and Austin Energy have maintained city council governance structures. Currently, CSU is in the midst of a Governance Structure and Governance Process Review.

LADWP’s transition to full City Council authority would reduce the number of City stakeholders and centralize responsibility for LADWP; however, as found in Seattle, Austin, and Colorado Springs, the utility would likely remain highly prone to political influence and may continue to experience transparency and accountability issues.

**Table 5-2. City Council Structure: Resolution of Governance Challenges**

Governance Challenges	Decentralized City Authority	Lack of External Reporting, Trust, and Transparency
<i>Does Address</i>	<ul style="list-style-type: none"> <li>• City Council acts as a clear central authority</li> </ul>	<ul style="list-style-type: none"> <li>• Direct reporting channel established between utility leadership and City Council</li> </ul>
<i>Does Not Address</i>	<ul style="list-style-type: none"> <li>• Inherent politicization of decision making</li> <li>• Interest in utility matters influenced by election cycles</li> <li>• Appointed utility executives more vulnerable than City Council to blame for utility missteps</li> </ul>	<ul style="list-style-type: none"> <li>• Without a dedicated advisory staff, City Council has limited expertise and bandwidth for utility issues</li> <li>• Utility is vulnerable to public distrust of politics</li> <li>• Decision making based on political whim rather than firm business principles</li> </ul>

### 5.5.3 Appointed Board Governance

The San Francisco Public Utilities Commission (SFPUC), CPS Energy (CPSE), and Jacksonville Energy Authority (JEA) serve as examples of various appointed board governance structures. SFPUC is governed by five commissioners who are nominated by the Mayor and approved by the San Francisco Board of Supervisors. CPSE is governed by a five-member Board of Trustees, which includes the Mayor (ex-officio) and four other representatives from the four geographical quadrants of San Antonio who are selected by majority vote of the remaining members and confirmed by City Council. JEA is governed by a seven-member Board of Directors that is appointed by the Mayor and confirmed by City Council.

Appointed board governance offers many of the strengths that may be seen with an elected board. Clear leadership by a central authority with subject matter expertise and dedicated attention simplifies operations and provides the professional oversight necessary to create an atmosphere of accountability and support long-term goals based on firm business principles. However, board appointment re-exposes the process to city-wide politics and sometimes obscures accountability. For example, in 2009 CPSE was involved in a \$32 million lawsuit to exit a nuclear deal, partly as the result of CPSE executives withholding critical financial information from the Mayor and City Council regarding a \$4 billion increase in expected construction costs. Additionally, JEA is currently facing serious governance and legal issues with the Sunshine Law: the Board was discovered to be preparing scripted talking points in advance of meetings.

The problems encountered by CPSE and JEA argue that, if the same structure were adopted, LADWP may be at higher risk of a communication breakdown between various layers of authority. One option for LADWP could be to simplify the structure by involving City elected officials and executives directly in the board. A board comprised of five City stakeholders would clarify and centralize roles and responsibilities while allowing multiple City offices to have direct input.

**Table 5-3. Appointed Board Structure: Resolution of Governance Challenges**

Governance Challenges	Decentralized City Authority	Lack of External Reporting, Trust, and Transparency
<i>Does Address</i>	<ul style="list-style-type: none"> <li>• Appointed board acts as a clear central authority</li> <li>• Focused attention on utility matters at all times</li> <li>• More shared responsibility between board and utility executives</li> </ul>	<ul style="list-style-type: none"> <li>• Direct reporting channel established between utility leadership and board</li> <li>• With board member expertise requirements, members will have necessary skillset and knowledge to run the utility</li> <li>• Decision making likely to be based on firm business principles</li> </ul>
<i>Does Not Address</i>	<ul style="list-style-type: none"> <li>• City-wide politics may influence board appointments (mitigated by fixed terms and limited reappointments)</li> </ul>	<ul style="list-style-type: none"> <li>• Reporting channel between the board and the City not clearly established</li> <li>• Without requirements for board member expertise, members may lack necessary skillset and knowledge to run the utility</li> <li>• Because the board is not directly accountable to the public, it is potentially less transparent</li> </ul>

### 5.6 Roadmap for Change

Creating a new governance structure to address LADWP’s current governance challenges is no small undertaking. If the City of Los Angeles chooses to pursue fundamental governance changes as discussed in this chapter, it will be embarking on a complex, multi-year journey. Navigant recommends that the City initiate a process by which it can ultimately propose specific governance reforms on the 2017 ballot. This should be an inclusive process that emphasizes consensus among the stakeholders. Notably, here we include representatives from union leadership. The employee unions and their leaders would need to be active participants in any conversation concerning the governance of the Department. The perspective of the union into the current governance challenges is a valuable source of information, and we believe it is essential to include in a successful reform effort.

In the near term, increased transparency through reporting is one of the simpler solutions to several of LADWP’s governance issues. Improved reporting on key metrics would help address the lack of transparency, accountability, and oversight. However, this is unlikely to achieve a permanent improvement, nor does it address every governance challenge. The governance issues described should provide sufficient motivation for revisions to the City Charter by ballot measure, as part of a long-term change process. However, significant additional work must be completed before those revisions are determined. Navigant’s recommendations below outline a framework for the City to approach fundamental long-term changes.

### Near-Term Recommendation

Navigant recommends that LADWP tie financial and performance metrics to rates by ordinance. This would mean defining and reporting a set of key metrics to decision makers on a specific schedule, in order to inform annual rate adjustments via the adjustment factors. Specifically, for each major Department program and initiative, the ordinance would require agreed-upon metrics (including budget targets and actuals, milestones, etc.) to be reported to the Office of Public Accountability, Board of Water and Power Commissioners, and City Council (Energy and Environment Committee).

### Long-Term Recommendation

The City of Los Angeles should take the following steps for its governance reform process:

- City Council introduces a motion forming a committee to examine governance reforms for the LADWP, with the explicit task of reporting on its findings and recommending a measure for the 2017 ballot.
- City Council forms a hybrid committee which includes, at a minimum, representatives from the Mayor's office, City Council Energy & Environment Committee, CAO, CLA, Controller, City Attorney, Office of Public Accountability, Board of Water and Power Commissioners, the general manager of LADWP, and a representative from labor. Navigant recommends that the CAO, CLA, and an outside third-party facilitator be assigned the role of facilitators (additional detail on facilitation in Volume IV).
- The committee defines the governance issues it seeks to address via ballot measure.
- The committee conducts an in-depth study of solutions to the specified governance issues, including multiple opportunities for public input.
- The committee reaches consensus on a solution and submits a final report with a proposed ballot resolution to City Council, in time for the 2017 ballot according to a schedule set by the CAO, CLA and City Attorney.
- City Council requests the City Attorney, with the assistance of the CAO and CLA as necessary, to prepare a ballot title and finalize the resolution for placement on the 2017 ballot.

The final result of this process should be a measure that the committee in good faith believes will address LADWP's current governance issues.

## 6. Unified Water

### 6.1 Objectives & Approach

In this chapter, Navigant highlights the changing role of a water utility in California. While there is attention on the governance structure of LADWP, the City may find it valuable to also reevaluate its city-wide approach to water (including potable water, storm water, and wastewater). In Navigant's interviews and further review of alternative governance structures for the Department, we began to explore the City's options for creating a single, holistic water function (either within or without LADWP). This chapter summarizes our findings in order to support a discussion around how Los Angeles views and manages this increasingly valuable and scarce resource.

During Navigant's interviews regarding LADWP's governance structure, the idea was posed to combine the Water System with water functions across Los Angeles, encompassing the water-related responsibilities of the Los Angeles County Public Works Department and the City of Los Angeles Bureau of Sanitation. In response to this suggestion, Navigant reviewed several state and city-level initiatives as well as two utility case studies with a unified water approach.

The initiatives reviewed include the following:

- The California Water Action Plan: A statewide plan released in January 2014, focusing on water conservation. The plan outlines water recycling, expanded storage, groundwater management, investment in safe drinking water, and wetland and watershed restoration as imperative for the state's journey toward sustainable water management. One specific action calls for increased regional self-reliance and integrated water management across all levels of government.
- Governor Brown's Executive Order directing the State Water Resources Control Board to impose restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016.
- City of Los Angeles Water Integrated Resource Plan: A 2006 IRP with plans through 2020 that call on City Departments and the community to manage all water as one water.
- City of Los Angeles One Water L.A. 2040: Builds upon the success of the IRP by expanding coordination and partnerships between City Departments, regional agencies, and new and existing stakeholders to achieve a more sustainable water future for LA beyond the year 2020.
- The Sustainable City pLAn / Mayor Garcetti's Executive Directive Number 5: A plan to reduce per capita potable water use by 20 percent by 2017, establish a Water Cabinet to implement key aspects of local water policy, expand recycled water production by at least 6 million gallons per day, and replace 95 miles of water pipe infrastructure.
- County of Los Angeles Enhanced Watershed Management Program: A program in which municipalities, non-governmental organizations, and community stakeholders work collaboratively to develop Enhanced Watershed Management Plans (EWMPs) for each of the county's five watersheds.

In these initiatives, we note a recurring theme emphasizing the need for collaboration amongst key stakeholder groups to manage all aspects of the water cycle in a coordinated fashion. Clearly, policy

makers are recognizing that water issues can no longer be addressed in isolation. This, combined with the drought emergency, presents the optimal opportunity to discuss the unified management of the City’s water infrastructure.

This work has already been initiated in Los Angeles by TreePeople, a local non-profit organization which recently brought together the Los Angeles water agencies as part of the Greater LA Water Collaborative to build the case for a collaborative, systemic approach to address the region’s short-term drought emergency and long-term water crisis. Navigant recommends the City not only support collaboration of this type, but conduct an additional in-depth study of the management of the three Los Angeles water agencies as one entity.

The chapter is organized into the following sections:

1. Water in California
2. Combining Water Utilities
3. Future Approach for Los Angeles

## ***6.2 Water in California***

California utilities are generally aligned with the California State Water Resources Control Board’s mission “to preserve, enhance, and restore the quality of California’s water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations”<sup>8</sup> and have moved towards greater collaboration.

Furthermore, California is in the midst of an unprecedented water crisis. According to the State Water Resource Control Board, severe drought combined with ecosystem decline, climate change, and population growth are testing California’s ability to provide the clean water needed for a healthy environment, population, and economy both now and in the future.<sup>9</sup>

### **6.2.1 Drought**

In January 2014, California Governor Edmund G. Brown Jr. proclaimed a State of Emergency directing state officials to take all necessary actions to prepare for drought conditions. In April 2014, he proclaimed a Continued State of Emergency due to critically low rainfall and snowpack levels, redoubling state drought actions. California’s water supplies continue to be severely depleted, with record low snowpack in the Sierra Nevada Mountains, decreased water levels in most of California’s reservoirs, reduced flows in the state’s rivers, and shrinking supplies in underground water basins – leading to challenges including drinking water shortages in communities across the state, diminished water for agricultural production, degraded habitat for fish and other wildlife, increased wildfire risk, and the threat of saltwater contamination to fresh water supplies in the Sacramento-San Joaquin Bay Delta.

With the possibility of the drought stretching into 2016 and beyond, Governor Brown issued an Executive Order in April 2015, calling for the State Water Resources Control Board (State Water Board)

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<sup>8</sup> [www.swrcb.ca.gov/about\\_us/water\\_boards\\_structure/mission.shtml](http://www.swrcb.ca.gov/about_us/water_boards_structure/mission.shtml).

<sup>9</sup> [www.swrcb.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2013/rs2013\\_0003\\_a.pdf](http://www.swrcb.ca.gov/board_decisions/adopted_orders/resolutions/2013/rs2013_0003_a.pdf).



to impose restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016, among other water saving initiatives.<sup>10</sup>

### 6.2.2 Water Management Plans

The California Water Action Plan, released by Governor Brown in January 2014, focuses on conservation and lays out water recycling, expanded storage, groundwater management, investment in safe drinking water, and wetland and watershed restoration as imperative for the state’s journey toward sustainable water management. One specific action calls for increased regional self-reliance and integrated water management across all levels of government. This action acknowledges that the management of infrastructure and investment for multiple functions is sometimes handled separately by individual agencies within a region. It is accompanied by guidance to integrate individual government efforts into one combined regional commitment to result in an effort with a “sum greater than any single piece.”<sup>11</sup>

The City of Los Angeles was actually a step ahead of this advice with its 2006 adoption of the award-winning Water Integrated Resource Plan (IRP), an implementable facilities plan through the year 2020 that calls on City Departments and the community to manage all water “as one water.” The IRP resulted in citywide benefits including cost savings, water conservation, and reduced dependence on imported water supplies by better utilization of recycled water and runoff.<sup>12</sup> The One Water LA 2040 Plan builds upon the success of the IRP by expanding coordination and partnerships between City Departments, regional agencies, and new and existing stakeholders to achieve a more sustainable water future for Los Angeles beyond 2020.<sup>13</sup>

Upon taking office in 2013, Los Angeles Mayor Eric Garcetti appointed the City’s first Chief Sustainability Officer, Matt Petersen, and created a Mayor’s Office of Sustainability. Garcetti tasked Petersen with leading the effort to create the Sustainable City pLAN – described as a comprehensive, actionable directive designed to produce meaningful results today and in the future by addressing the environment, economy, and equity together to move toward a truly sustainable future. Short-term water initiatives include meeting Executive Directive Number 5 (reducing per capita potable water use by 20 percent by 2017), establishing a Water Cabinet to implement key aspects of local water policy, expanding recycled water production by at least 6 million gallons per day, and replacing 95 miles of water pipe infrastructure. Long-term goals include reducing LADWP’s purchases of imported water by 50 percent by 2025, sourcing 50 percent of water locally by 2035 (including 150,000 acre-feet per year of storm water capture), reducing average per capita water use by 22.5 percent by 2025 and 25 percent by 2035, improving stormwater quality, and reducing the number of annual sewer spills to fewer than 100 by 2025 and fewer than 67 by 2035.<sup>14</sup>

The Enhanced Watershed Management Program is yet another initiative within the County of Los Angeles in which municipalities, non-governmental organizations and community stakeholders are working collaboratively to develop Enhanced Watershed Management Plans (EWMPs) for each of Los

<sup>10</sup> [www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/docs/040115\\_executive\\_order.pdf](http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/040115_executive_order.pdf).

<sup>11</sup> The California Water Action Plan is available at:

[resources.ca.gov/docs/california\\_water\\_action\\_plan/Final\\_California\\_Water\\_Action\\_Plan.pdf](http://resources.ca.gov/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf).

<sup>12</sup> The Los Angeles Water IRP is available at:

[http://lacitysan.org/irp/documents/FINAL\\_IRP\\_5\\_Year\\_Review\\_Document.pdf](http://lacitysan.org/irp/documents/FINAL_IRP_5_Year_Review_Document.pdf).

<sup>13</sup> One Water L.A. website: [www.lacitysan.org/onewater/index.html](http://www.lacitysan.org/onewater/index.html).

<sup>14</sup> The Sustainability City pLAN is available at: <http://san.lacity.org/pdf/pLAN.pdf>.

Angeles’ five watersheds. Each watershed has a Watershed Management Group that meets regularly to identify current and future multi-benefit projects that will improve water quality and promote conservation and will identify appropriate control measures, monitoring plans, and strategies for adaptive management of projects.<sup>15</sup>

Although this is not an exhaustive review of water initiatives in California, it demonstrates a strong endorsement of collaboration between agencies by state and Los Angeles policymakers.

## 6.3 Combining Water Utilities

### 6.3.1 Los Angeles

The City of Los Angeles’ water infrastructure is divided amongst three agencies: the City of Los Angeles Bureau of Sanitation (LASAN), Los Angeles County Department of Public Works (LACDPW), and LADWP. These agencies have historically operated within bureaucratic silos to manage discrete, yet overlapping aspects of the water cycle. Responsibilities are currently divided into the following:

- LASAN collects, cleans, and recycles solid and liquid waste through the administration of three primary programs: wastewater collection, conveyance, treatment, and disposal; solid resources collection, recycling, and disposal; and watershed protection.<sup>16</sup>
- LACDPW provides sustainable water supplies and healthy watersheds while reducing flood risks. Priorities include stormwater management, groundwater banking, water conservation, recycling, and reclamation, and maintaining the Sanitary Sewer Network.<sup>17</sup>
- LADWP provides 666,000 customers with reliable, high quality water and leads water recycling programs and conservation efforts for the City.<sup>18</sup>

Independent management of these entities leads to operational redundancies, missed opportunities for water savings, and inflated costs for Los Angeles residents. However, with the current drought, new water regulations, and increased public awareness of California’s water vulnerability, policy makers and the public are recognizing that these issues can no longer be addressed in isolation.

### 6.3.2 San Antonio

Prior to 1992, the water system in San Antonio looked quite similar to that of Los Angeles. Water was managed by three separate agencies: the city-owned water supply utility, the government department responsible for sewage collection and treatment, and an independent city agency created to develop a system for reuse of treated wastewater.

In May 1992, the refinancing of \$365 million in water and wastewater bonds made consolidation of the three agencies into the San Antonio Water System (SAWS) possible. SAWS is a separate entity from the

<sup>15</sup> Enhance Watershed Management Program: [www.lastormwater.org/green-la/enhanced-watershed-management-program](http://www.lastormwater.org/green-la/enhanced-watershed-management-program).

<sup>16</sup> City of Los Angeles Sanitation website ([www.lacitysan.org/general\\_info/about\\_us/service\\_summary.htm](http://www.lacitysan.org/general_info/about_us/service_summary.htm)).

<sup>17</sup> Water Resources, Department of Public Works ([dpw.lacounty.gov/landing/waterResources.cfm](http://dpw.lacounty.gov/landing/waterResources.cfm)).

<sup>18</sup> LADWP website ([www.ladwp.com/ladwp/faces/ladwp/aboutus/a-water?\\_adf.ctrl-state=bnco2mpv8\\_163&\\_afLoop=587745062990445](http://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-water?_adf.ctrl-state=bnco2mpv8_163&_afLoop=587745062990445)).

electric utility CPSE and is governed by the San Antonio Water System Board of Trustees (the Mayor and six members appointed by City Council). The Board of Trustees is responsible for overall policy and management of the system. The leadership team comprises the President/CEO, two senior vice presidents, and ten vice presidents whose goal is to maximize productivity and efficiency. Since the formation of SAWS, San Antonio has been recognized nationally for its novel conservation efforts and proactive water management planning. It is the only U.S. city to reuse all three wastewater treatment process byproducts.<sup>19</sup>

### **6.3.3 Sacramento**

Sacramento provides another example of a water system managed independently from the electric utility. The Department of Utilities provides all critical water services to Sacramento including wastewater and storm drainage. Rates for service are set by the Sacramento City Council, which is informed by input from a seven-citizen Utilities Rate Advisory Commission.

With all aspects of the water cycle under its management, the Department of Utilities is reportedly able to streamline and enhance conservation efforts, manage regulatory compliance without redundancies, protect water rights and quality without oversight, prevent contamination of local creeks and rivers, and maintain adequate financial reserves to provide financing for long-term infrastructure improvements.<sup>20</sup>

## ***6.4 Future Approach for Los Angeles***

The Los Angeles water agencies were recently brought together by local nonprofit TreePeople as part of the Greater LA Water Collaborative to build the case for a collaborative, systemic approach to address the region’s short-term drought emergency and long-term water crisis.<sup>21</sup> By aligning the diverse water and related infrastructure agencies’ goals, investments, and programs, the three organizations would ideally be able to achieve benefits including greener and more resilient neighborhoods, a more responsive government, and decreased costs to the public.

Phase One of the three phase project encourages the agencies to establish a whole water cycle collaboration that enables necessary horizontal coordination. The system would allow agency management to gain perspective of the entire system’s functionality and resilience but would not detract from individual responsibilities or hierarchy.

The Greater LA Water Collaborative partners are now moving forward into the second phase of the project to develop a framework for increased collaboration and shared prioritization, decision-making, and management across the agencies. TreePeople recommends the Greater LA Water Collaborative partners take steps to achieve no less than a systemic collaboration approach to meet the City’s water needs.

The benefits of a collaborative approach could be further amplified by creating a single entity with the sole purpose of managing all aspects of the City’s water, wastewater, stormwater, and flood protection services. However, this is a more dramatic step than suggested by previous work. It would require a large organizational and cultural change with significant impacts on the Water Organization. It would

<sup>19</sup> San Antonio Water System website ([www.saws.org/who\\_we\\_are/](http://www.saws.org/who_we_are/)).

<sup>20</sup> City of Sacramento Utilities website ([www.cityofsacramento.org/Utilities](http://www.cityofsacramento.org/Utilities)).

<sup>21</sup> “Moving Towards Collaboration: A New Vision for Water Management in the Los Angeles Region,” TreePeople ([www.treepeople.org/sites/default/files/pdf/publications/Moving%20Towards%20Collaboration\\_e-version.pdf](http://www.treepeople.org/sites/default/files/pdf/publications/Moving%20Towards%20Collaboration_e-version.pdf)).



also require several City Charter changes, the full support of City leaders and Department management, and a larger process at the County level to include LACDPW. The ultimate design of an integrated water group demands a dedicated analysis of its own. Navigant recommends the City of Los Angeles initiate a study to provide this analysis.

## 7. Security and Emergency Preparedness

### 7.1 Security

#### 7.1.1 Objectives & Approach

This chapter presents Navigant’s findings on Security for the IEA Survey. Security at LADWP is critical to protecting Water and Power System infrastructure. Cyber and physical threats are pervasive in the world we live in and it is important for the Department to have the plans, processes and structure to ensure that threats and vulnerabilities are identified and mitigated. For the IEA Survey, Security includes:

- **Critical Infrastructure Protection (CIP) Compliance:** CIP Compliance is a North American Electric Reliability Corporation (NERC) requirement related to physical and cybersecurity. Navigant examined LADWP’s CIP Compliance Program and the Department’s transition from NERC CIP Version 3 to CIP Version 5 standards, including a review of the progress being made with current NERC CIP-014 (Physical Security Standard) implementation efforts.
- **Cybersecurity:** A cyber-risk assessment across the recognized primary domains of cybersecurity, modeled after the Cybersecurity Capability and Maturity Model (C2M2); and
- **Physical Security:** A physical security review to assess the abilities of the LADWP to deter, protect, detect, communicate, and coordinate in case there is a threat made or realized to the critical infrastructures of the LADWP. The review included visual inspections of certain critical facilities.

A summary of findings, including corporate policy and governance recommendations related to cyber and physical security, is provided at the conclusion of this chapter. Insights from interviews and document review complement these assessments.

#### 7.1.2 CIP Compliance

The North American Electric Reliability Corporation (NERC) is an international regulatory authority whose mission is to assure the reliability of the bulk power system in North America. NERC’s area of responsibility includes the United States, Canada, and the northern portion of Baja California, Mexico. As the electric reliability organization (ERO) for North America, NERC is subject to oversight from the Federal Energy Regulatory Commission (FERC) and governmental authorities in Canada.

NERC develops and enforces reliability standards, monitors the bulk system through system awareness, and trains and certifies industry personnel. NERC’s jurisdiction includes users, owners, and operators of the bulk power system.<sup>22</sup> Accordingly, LADWP must comply with NERC requirements. NERC Reliability Standards define the reliability requirements for planning and operating the North American bulk power system. The Reliability Standards focus on measurable performance, risk mitigation strategies, and entity capabilities.<sup>23</sup> One component of these NERC standards are the Critical

<sup>22</sup> NERC website (<http://www.nerc.com/AboutNERC/Pages/default.aspx>).

<sup>23</sup> NERC website (<http://www.nerc.com/pa/Stand/Pages/default.aspx>).

Infrastructure Protection (CIP) mandatory and enforceable standards, which address the cybersecurity, physical security, and operational security of the bulk electric system.<sup>24</sup>

While Version 3 of the CIP standards (CIP v3) is currently effective, FERC approved Version 5 (CIP v5) in November 2013. CIP v5 adopts new cybersecurity controls and extends the scope of the systems protected by the CIP v3 standard. CIP v5 will become mandatory and enforceable on April 1, 2016 for medium and high Bulk Electric Systems and Cyber Systems.<sup>25</sup> This version of the NERC CIP standard significantly increases the efforts that the Department needs to undertake to mitigate cyber risks to the bulk power system. Based on a brief overview of CIP Version 5 documentation and interviews with LADWP staff responsible for CIP compliance, Navigant found that the Department appears to have an adequately defined plan and timeline to comply with future NERC regulations. The CIP project team has a sufficient budget and is well-managed and comfortable with the milestones, deliverables, and products; however, senior leadership should be more engaged in the CIP Version 5 transition process as the deadline approaches to ensure CIP compliance risk is minimized.

Further, it is common practice that utilities such as LADWP work with regional representatives from NERC to further audit compliance plans, timelines, and supporting documentation. Accordingly, Navigant recommends that LADWP further engage with the Western Electricity Coordinating Council (WECC), LADWP's regional representative with delegated authority from NERC to monitor and enforce compliance.<sup>26</sup> Navigant further recommends that the Department participate in standard development bodies, NERC technical committees, and NERC national grid exercises.

Due to security restraints at the Department, access to CIP Version 5 policies, procedures, facility and BES Cyber System documentation was limited to two interviews with CIP compliance leadership. This restricted access was largely due to the preliminary status of LADWP's CIP Version 5 documentation. Consequently, Navigant only obtained a cursory review of the CIP Version 5 product and cannot opine on the detailed plans for CIP v5 compliance.

LADWP is similarly positioned to comply with CIP-014, the physical security standard. The purpose of CIP-014 is to identify and protect transmission stations, transmission substations, and their associated primary control centers from physical attack.<sup>27</sup> The CIP Compliance team at the Department is in the process of identifying the critical bulk power facilities and completing threat and vulnerability assessments for those facilities. The Department has a consulting firm assisting with these efforts and appears to be progressing towards compliance with the standard requirements.

### 7.1.3 Cybersecurity

Navigant conducted a maturity assessment of ten cyber domains and found that some of the Department's cybersecurity efforts lack documented policies and processes. According to interviews

<sup>24</sup> NERC website ([www.nerc.com/pa/CI/Pages/default.aspx](http://www.nerc.com/pa/CI/Pages/default.aspx)).

<sup>25</sup> The CIP v5 requirements applicable to low impact bulk electric system cyber systems will become enforceable on April 1, 2017. See "Cyber Security Reliability Standards CIP V5 Transition Guidance," NERC Compliance Operations, August 12, 2014 ([www.nerc.com/pa/CI/Documents/V3-V5%20Transition%20Guidance%20FINAL.pdf](http://www.nerc.com/pa/CI/Documents/V3-V5%20Transition%20Guidance%20FINAL.pdf)).

<sup>26</sup> There are eight Regional Entities that monitor and enforce NERC compliance standards. FERC approved NERC's delegation of authority to the Regional Entities in 2007. Together, NERC and its Regional Entities are referred to as the Electric Reliability Organization (ERO) Enterprise. See "Improving Coordinated Operations across the ERO Enterprise," February 2014 ([www.nerc.com/AboutNERC/keyplayers/Pages/default.aspx](http://www.nerc.com/AboutNERC/keyplayers/Pages/default.aspx)).

<sup>27</sup> CIP-014-1 Standard ([www.nerc.com/pa/Stand/Reliability%20Standards/CIP-014-1.pdf](http://www.nerc.com/pa/Stand/Reliability%20Standards/CIP-014-1.pdf)).

with LADWP staff, the Department is developing an Enterprise Cyber Security Plan that will identify key areas that need improvement and provide plans to address them. This document needs executive level support to ensure timely completion and consistent implementation throughout the Power, Water and Joint Services Systems.

Several major findings resulted from the cybersecurity maturity assessment, including insufficient executive level leadership and governance, resource constraints, a lack of formal policies, and limited communication among the Power, Water, and Joint Services Systems at the Department. Navigant found that the IT group within the Joint Services System is not able to quickly hire experienced, mid-level cybersecurity professionals, which limits the Department's ability to adapt and respond to the rapidly changing cybersecurity environment. Navigant also found that many cybersecurity processes are ad-hoc and inconsistent throughout the organization. For example, there are no policies, procedures, or risk register that clearly identify prioritized risks on an enterprise level. This ad-hoc approach to risk impacts the other cybersecurity domains such as threat and vulnerability management because without documented risk strategy and risk criteria, cybersecurity vulnerability assessments may not be analyzed and prioritized appropriately.

Moreover, there is little oversight from senior management and executive leadership due to the lack of formal processes and accountability. While this decentralized approach works for the management of certain Operations Technology (OT) assets, the Department is not able to appropriately prioritize cybersecurity issues on an enterprise level. Furthermore, LADWP is not able to track the completion of critical cybersecurity projects. Formalized security processes and increased communication between Power, Water and Joint Services Systems would ensure proper resource utilization, consistent implementation, and project completion for critical security needs.

#### **7.1.4 Physical Security**

The Physical Security group at the Department is restricted by a lack of authority and processes to ensure that security gaps are reported and resolved. Facility managers in the Water and Power Systems are not required to report physical security threats or vulnerabilities to the Physical Security group and they are ultimately responsible for financing and resolving these gaps. Accordingly, if security gaps are reported to Physical Security, the group does not have the authority to ensure that facility managers implement its physical security recommendations or the capital project budget to close critical security gaps at these facilities. This decentralized organizational structure and lack of formal business processes do not allow the Department to be proactive about physical security measures.

Physical Security has completed numerous assessment audits on LADWP facilities; however, according to staff interviews, the security recommendations included in these audits have not been addressed. Moreover, the facility managers do not provide any feedback or status updates back to Physical Security once these recommendations are provided. In addition to the assessment audits, Navigant reviewed a 2001 security assessment of critical Power and Water facilities that found numerous security gaps and provided recommendations to address these vulnerabilities. Similarly, interviews with Department personnel indicated that these recommendations were not implemented. Based on these findings, Navigant staff visited some of the Department's critical facilities. Navigant found that most of the security gaps in the 2001 assessment were not mitigated. Conversations with facility managers at these facilities confirmed that the lines of accountability to address security gaps are broken.

Further, the Security Planning component of Physical Security, which plans and manages physical security projects, has been moved around the Department in recent years. As a result, Physical Security does not have the capital budget, authority, or processes to ensure that physical security in the Power and Water Systems is prioritized. Navigant recommends that the Department create a clearly defined process to ensure that security gaps are addressed and communicated to Physical Security and senior management. The Physical Security group should have more oversight into the dispersion of security resources to ensure proper placement and project accountability.

### **7.1.5 Conclusions**

Past assessments by LADWP security staff and the recent assessment conducted by Navigant have revealed a number of factors that limit the Department's ability to mitigate security threats and vulnerabilities, including a lack of formal cyber and physical security processes, limited risk assessments, constrained resources, and limited executive level support. While certain aspects of Security such as CIP Compliance and Water OT security are robust, security is not appropriately addressed on an enterprise level. Moreover, there is no formal executive governance structure to support cyber and physical security initiatives.

LADWP has the opportunity to address these issues and increase the reliability of the bulk electric system and the integrity of Los Angeles' water supply. Navigant recommends a behavioral and structural change from the top down to empower security personnel and to initiate a Department-wide shift towards proactive security measures. LADWP should create senior executive level positions for security and risk that report directly to the General Manager.

A formal risk and security governance would provide the accountability needed to ensure that security processes are documented, implemented, and updated throughout the organization. Furthermore, it would provide a formalized structure to identify and prioritize risk, which is critical to effectively managing security vulnerabilities. This structure is aligned with industry best practice and will allow the Department to continuously and consistently mitigate threats and vulnerabilities. Both physical and cybersecurity personnel should have the appropriate budget and staff to support these changes. In addition to an empowered security staff, the Department should consider developing an updated Corporate Security Policy that identifies the processes necessary to communicate security vulnerabilities, mitigation efforts, and risk assessment on a corporate level.

A prioritized list of recommendations for improvement are included below. Some actions are already underway, but others will require additional attention and resources from the Department and the City.



### High Priority Recommendations

- Develop a Corporate Security Plan that includes sound policies, programs, and project management for cyber and physical security on an enterprise level.
- Create executive level security and risk positions that report to the General Manager to distribute and enforce the Corporate Security Plan and other cyber and physical security initiatives.
- Complete the Enterprise Cyber Security Plan to identify and address weaknesses in the cybersecurity program.
- Identify risk criteria and develop a risk register to prioritize risk assessments on an enterprise level.
- Initiate 24x7 cybersecurity monitoring to provide a common operating picture of the cybersecurity environment in near real-time.
- Develop a formalized process to identify and mitigate physical security threats and vulnerabilities across Systems.
- Move Security Planning back to Physical Security to ensure that the group has project management resources.
- Provide Physical Security with a line budget to close critical security gaps.
- Improve the hiring process for experienced, mid-level staff in the cyber workforce.
- Develop detailed continuity plans to sustain and restore operation if a disruption occurs, including a complete Business Impact Analysis to appropriately prioritize processes and resources in the event of a major incident.

### Medium Priority Recommendations

- Upgrade Central Monitoring System, the camera monitoring system used by Physical Security, to include a smart system.
- Develop the relationship with the Western Regional auditors to confirm the Department's interpretation of CIP Version 5.
- Increase participation in standard development bodies, NERC technical committees, and NERC GridEx.
- Create a formalized practice for information sharing that includes horizontal and vertical communication policies, processes, and capabilities to enable real-time sharing.
- Conduct cybersecurity exercises on a regular basis.
- Complete cybersecurity vulnerability assessments for all critical assets.
- Aggregate log data for cybersecurity assessments to identify patterns, trends, and common features.

### Low Priority Recommendations

- Ensure that the credentials for employees align with their current position.
- Formalize the relationship between cybersecurity requirements and supplier contracts.

## 7.2 Emergency Preparedness

### 7.2.1 Objectives & Approach

This chapter presents Navigant’s findings on Emergency Preparedness for the IEA Survey. Comprehensive emergency preparedness is central to any utility’s strategic and operational planning, as natural and man-made threats can significantly disrupt normal operations. As a municipal utility, the Department has a unique accountability for ensuring the design, implementation, testing, and continuous improvement of emergency preparedness programs. Indeed, such plans are critical for ensuring that the Department can achieve its Mission to provide “clean, reliable water and power in a safe, environmentally responsible and cost-effective manner with excellent customer service.”

This chapter is a strategic and operational assessment of both the emergency response and business continuity stance of the LADWP. Emergency Preparedness and Business Continuity are closely related disciplines, which in combination provide a comprehensive framework for responding to a “worst-case disruption.”

Navigant reviewed the organizational structures, accountabilities, policies, and business practices adopted by the Department to complete this chapter. We also conducted interviews with Department staff to gain further insight into the current and proposed emergency and continuity practices. The goal of this assessment is to identify and recommend opportunities for improving the Emergency Preparedness and Business Continuity disciplines at the Department. For the IEA Survey, Emergency Preparedness and Business Continuity include:

- **Emergency Preparedness and Business Continuity Overview:** An introduction to the disciplines of Emergency Preparedness and Business Continuity.
- **Emergency Preparedness and Business Continuity in Utilities:** A description of common practices adopted by utilities.
- **Standards in Emergency Preparedness and Business Continuity:** An overview of the various standards that influence these disciplines.
- **Emergency Preparedness and Business Continuity at the Department:** An assessment of the current and proposed policies and practices at LADWP.

A summary of findings and recommendations is provided at the conclusion of this chapter.

### 7.2.2 Emergency Preparedness and Business Continuity Overview

Emergency Preparedness is defined as a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response. Emergency Preparedness is directly related to other business disciplines, including most notably Business Continuity Management (BCM) and Disaster Recovery (DR). BCM is a holistic

management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause. This process provides a framework for building organizational resilience that safeguards the interests of the organization’s key stakeholders, reputation, brand, and value-creating activities. DR is the collection of policies, plans, and actions to recover system applications and infrastructure in a tiered approach, whereby technology priorities are identified (software and hardware) to facilitate the continuation and recovery of key business processes. DR is often considered the technical aspect of business continuity.

As mentioned above, BCM is a forward-looking and holistic approach to building organizational resiliency. It is a coordinated and integrated approach that spans the entire company and all of its operations. Central to BCM is the Business Impact Analysis (BIA). A BIA identifies the critical business processes that are most affected by a worst-case disruption, and helps prioritize recovery strategies for an extended business disruption. It is important to note that the core principles of BCM—including the derivation of a BIA or DR plan—are standard in the utility industry. Despite this, the Department does not have a BCM program and has never completed a BIA.

### **7.2.3 Emergency Preparedness and Business Continuity in Utilities**

Increasingly, utilities are being scrutinized for their response to emergencies and disasters that significantly disrupt normal operations. While focus and attention is often given to the potential impact of natural disasters, other scenarios that require planning and response include acts of terrorism, sabotage, cyberattacks, or other similar events. A variety of stakeholders—including regulators, customers, and community leaders—have focused more and more attention on the planning and recovery from all types of emergency and disaster. In light of this, utilities are designing and implementing programs to actively assess situations and respond with the execution of specific protocols to restore critical services in a phased and prioritized manner, based on a standard risk assessment.

These efforts are of great importance to investor-owned and municipal utilities alike. Erosion to the reputation of (and trust in) a utility due to an inadequate response to an emergency or disaster event can have long-term implications. Evidence confirms that overcoming a significant reputational risk event requires the dedication of significant resources (time and capital) often over a long period of time, and diverts attention away from other activities that advance the strategic plans of the company.

### **7.2.4 Standards in Emergency Preparedness and Business Continuity**

A variety of standards define standard and leading practice in the Emergency Preparedness and Business Continuity disciplines in the energy and utility sector.

#### ***7.2.4.1 Federal Regulatory Standards***

Principal among the federal standards is Continuity of Operations (COOP) planning. The Department has developed and implemented a COOP policy and plan. Additional relevant standards are established by the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), and the Federal Emergency Management Agency (FEMA).

#### *7.2.4.2 California Rules and Regulations*

Although the California Public Utilities Commission (CPUC) mandates do not apply to the Department, it acknowledges and references these mandates when designing emergency response plans. Additional requirements from the California government code also influence LADWP planning efforts.

#### *7.2.4.3 Municipal Requirements*

The Department is required to support the City Emergency Management Department (EMD) and Emergency Operations Center (EOC) in the event of a significant regional emergency or disaster. These requirements are reflected in specific Mayoral Executive Directives.

#### *7.2.4.4 Other Standards*

Practices established by the International Organization for Standardization (ISO) and industry oversight groups (American Water Works Association (AWWA), Edison Electric Institute (EEI)) further inform the discipline of emergency preparedness and business continuity.

#### *7.2.4.5 Peer Practices*

In addition to regulatory requirements, emergency preparedness and business continuity planning is defined by utility sector peer practices. This chapter broadly identifies a series of common attributes of emergency preparedness and business continuity programs. The Department's programs are out of sync with these common practices in areas such as clear accountabilities, design and roll-out of a BCM program, active training and testing programs, alignment between BCM and DR plans, and clear governance over program leadership.

### **7.2.5 Emergency Preparedness and Business Continuity at the Department**

The following are key characteristics of the emergency and continuity programs at the Department.

#### *7.2.5.1 Organization*

- **Office of Emergency Management (OEM):** Emergency Preparedness at the Department is loosely coordinated by the Office of Emergency Management (OEM). However, significant accountability for plan development, improvement, testing, and training resides in the Systems and Divisions.
- **System Leads:** At present, the Department does not have comparable leadership roles in the Water and Power Systems. While the Water System has identified a resiliency lead, the Power System has not.
- **Resilience and Sustainability Programs:** The Water and Power Systems do not share a common approach to preparedness or continuity.

#### *7.2.5.2 Continuity of Operations Plan*

The Department's plan aligns with the required phases of COOP as outlined by FEMA. However, the plan does not seem to be actively embraced by the Department. According to the plan, a COOP Program Manager (OEM) will review and update the COOP, ensure that COOP testing, training, and exercising is

conducted, and define short and long-term COOP goals and objectives. The plan also states that all employees will be trained on COOP activation procedures at least once a year.

However, Navigant found that employees have not been trained on the COOP in recent years. Navigant recommends that the Department train and exercise this plan to inform employees of the processes in place to maintain operations after an event and to ensure that the mission essential recovery times are appropriate and achievable. As discussed in further detail in the *Security* portion of the IEA Survey, Navigant also recommends that LADWP further develop its risk assessment processes and procedures to support the relocation decisions and timelines associated with the COOP. The Department should also consider developing disaster-specific business continuity plans for earthquakes and other major events because priorities and timelines can change depending on the type of emergency.

#### ***7.2.5.3 Emergency Plans***

The Department has also created Emergency Response Plans (ERP) in accordance with the Mayoral Executive Directives. We believe the frequency of plan review, level of rigor and plan detail, frequency of training, and frequency, method, and rigor of testing need to be addressed. For example, the ERPs briefly discuss the Department's efforts to prepare for and mitigate the effects of specific threats and hazards likely to occur in Los Angeles; however, the documents lack detailed plans to fully prepare for these threats. Disaster-specific plans for these events would help the Department proactively prepare for these events beyond broad goals and mitigation plans.

Navigant also found that only nine employees attended the annual EMD emergency management workshop. According to Department personnel, attendance is limited to executive staff and OEM that receive an invitation from the EMD. Navigant recommends that LADWP conduct an internal Emergency Workshop to disseminate information gathered at the EMD Workshop as well as additional information that fosters emergency preparedness. Participants in the internal Emergency Workshop could include a combination of OEM, executives, and middle management that are rotated on an annual basis. In addition, 31 Department employees attended the EOC functional exercise, which was a two-hour exercise directed to the Power System. Based on this participation and scope, the effectiveness of the EOC exercise was limited. Department personnel also indicated that although the ERPs call for annual testing, the plans are not tested every year. The Department should increase the participation and frequency of emergency exercises to ensure that substantial staff in the Power, Water, and Joint Systems is involved and aware of the existing plans and procedures.

#### ***7.2.5.4 Crisis Communication Plan***

The plan clearly identifies the communication processes and resources that should be used in an emergency situation. Moreover, the plan includes multiple scenarios and levels of communication that can be applied to a wide range of emergency situations, which aligns with best practice.

#### ***7.2.5.5 Mutual Aid Assistance***

The Department has established mutual aid agreements with multiple regional organizations and utility peers. This reflects a best practice standard.

### **7.2.5.6 Business Impact Analysis**

The Department does not have a BCM program defined by a rigorous BIA or set of DR plans. These facets of organizational resiliency are commonplace for utilities and other organizations across all sectors. Consequently, the Department is behind the rest of the industry in this area.

### **7.2.6 Conclusions**

The Department has many of the policy frameworks that help define an emergency preparedness program. These include the COOP, ERP, and Crisis Communication Plans. However, features of rigorous programs—including evidence of routine and diverse testing, adherence to training requirements and schedules, clear accountability for plan design, development, and continuous improvement—are lacking at the Department. In addition, there is a lack of cohesion amongst the various emergency preparedness plans. While each document appears to define certain processes, resources, and strategies, it is unclear how these plans interact. Inadequate emergency preparedness can have significant impacts on operations as well as the health and safety of the employees and customers due to insufficient mitigation efforts, delayed responses and unorganized recovery.

OEM should create a strategic plan that identifies the emergency preparedness efforts that exist and the direction that the OEM will take to improve these efforts. A strategic plan would also establish timelines to complete OEM initiatives such as training employees and exercising and updating plans.

Leadership for these and other facets of good planning have been decentralized and pushed into the Water and Power Systems, which has resulted in distinct approaches for building organizational resiliency. Importantly, accountability for emergency and business continuity planning is also dispersed, and in many instances, is one of many responsibilities for an already burdened staff. These and other foundational aspects of good planning must be addressed to strengthen the emergency and continuity programs.

As discussed in Security, LADWP should create senior executive level positions for security and risk that report directly to the General Manager. In addition to the tasks outlined in Security, a formal risk and security governance would provide the accountability needed to ensure that emergency plans and processes are documented, implemented, and updated throughout the organization. Furthermore, it would provide a formalized structure to identify and prioritize risk, which is critical to effectively managing disruptions of service. This structure is aligned with industry best practice and will allow the Department to continuously and consistently mitigate natural and man-made threats.

In addition, the ERPs and COOP should address disaster resilience. While we understand that the ERPs are based on a template provided by the City of Los Angeles EMD, the Department's emergency preparedness documents are overly broad and do not address the gradation of responses from a single pipe break to a worst-case scenario. Moreover, the ERPs should incorporate known vulnerabilities into disaster-specific response planning.

A prioritized list of recommendations for improvement are included below. Some actions are already underway, but others will require additional attention and resources from the Department.

### High Priority Recommendations

- Dedicate resources to completing an OEM Strategic Plan to define major initiatives for 2016, including the staffing and capital resource requirements to design, execute, manage and monitor programs.
- Create executive level security and risk positions that report to the General Manager to distribute and enforce the plans related to emergency preparedness and business continuity as well as other emergency preparedness and disaster resiliency initiatives.
- Clarify the emergency preparedness and business continuity governance structure, roles, and responsibilities between the OEM and the Water and Power Systems for core aspects of program design, execution, and decision-making.
- Finalize the BCM and BIA RFP.
- Execute the BCM and BIA scope of work.
- Confirm a consistent approach to plan development across Systems.
- Establish a role in the Power System to address resiliency and emergency preparedness efforts.
- Expand and enforce emergency training and exercises.
- Develop a disaster recovery plan to prioritize IT functions in the event of an emergency.

### Medium Priority Recommendations

- Re-evaluate and conduct training programs in line with policies and good business practice.
- Define a rigorous testing plan for the programs, including a phased approach to tabletop and scenario tests (announced and unannounced), and testing of the “Hot Sites.”

### Low Priority Recommendations

- Review and standardize other aspects of the emergency preparedness programs (including templates and forms of documentation).
- Confirm performance reporting protocols to the General Manager and other members of executive management.
- Integrate emergency preparedness and business continuity programs into Department benchmarking initiatives.

## 8. Technology Infrastructure

### 8.1 Objectives & Approach

This chapter presents Navigant’s findings on Technology Infrastructure for the IEA Survey. Technology infrastructure plays a critical role in the effective management and continuous improvement of the Department’s operations. As a key driver of business processes, technology has a significant impact on the ability of LADWP to effectively and efficiently pursue its mission to provide safe, reliable, and affordable water and power utility services for the ratepayers of the City of Los Angeles.

This chapter is a strategic and operational assessment of the technology infrastructure of the LADWP, and in particular, the Information Technology Services Division (ITSD). ITSD is the Department’s internal technology services organization, and the primary vehicle through which the Department drives and manages its technology infrastructure. Navigant reviewed the business practices adopted by the ITSD to formulate and implement the strategic direction of the Department’s IT infrastructure and the tools with which the Department manages IT operations and evaluates performance. The goal of this assessment was to identify and recommend opportunities for the ITSD and, more broadly, the Department, to improve its approach and management of its technology infrastructure. This chapter includes:

- **IT Standards:** An overview of several of the most prominent industry standards related to technology infrastructure.
- **Functions and Services:** A review and assessment of the Department’s Information Technology Infrastructure Library (ITIL) in relation to best practices, including roles and responsibilities, the services offered, processes to be followed, and primary contact persons for each area of enquiry.
- **IT Strategic Planning and Governance:** A review of LADWP’s current IT environment for both corporate and System services and applications, as well as relationships with other functionality-specific Operational Technology (OT) environments.
- **Primary Applications and Suites Supported:** Navigant identified all of the major software applications used by the Department to gain an understanding of its current and future technological direction.
- **Hardware, Network and Telecommunications Infrastructure:** A review of the current standards for network operations, hardware, and telecommunications to determine if LADWP’s strategy is sustainable and consistent with best practices.
- **Portfolio and Project Management:** A review and assessment of the processes and tools used to manage the portfolio of IT assets, vendor relationships, and project management.
- **Information Security and Disaster Recovery:** Navigant assessed the Department’s information security policy and disaster recovery program.

A summary of findings and recommendations is provided at the conclusion of this chapter. Insights from interviews and document review complement our assessment.



## 8.2 Information Technology Standards

The discipline of information technology management is defined by specific standards established by oversight groups, as well as by the ongoing practices of technology professionals. Utilities with a large number of system applications commonly reference and apply control and management standards as defined by oversight groups such as the IT Governance Institute. The IT Governance Institute has two sets of widely accepted IT standards: Control Objectives for Information and related Technology (COBIT) and the IT Infrastructure Library (ITIL).

COBIT provides a framework to establish controls that ensure high levels of information quality, the establishment of clear policies, and adoption of good business practices. This framework is provided in four domains: planning and organization, acquisition and implementation, delivery and support, and monitoring. ISO 20000 is a global standard established by the International Organization for Standardization (ISO) that describes the requirements for an information technology service management (ITSM) system. The standard was developed to mirror the best practices described within the IT Infrastructure Library (ITIL) framework. ITIL provides a set of best practices related to IT service management, and includes practices that are categorized into five core areas, including service strategy, service design, service transition, service operation, and continual service improvement. The themes contained in these standards have been used to evaluate the maturity of the Department's technology-related policies and practices.

## 8.3 Information Technology Functions and Services

The Information Technology Services Division (ITSD) is LADWP's internal technology services organization. The division provides information systems technology to support the delivery of utility services. As a division in LADWP's Joint System under the Chief Administrative Office (CAO), the ITSD is responsible for management, policy setting, strategic planning, and leadership in the use of computer, radio, and telecommunications technologies with more than 450 full-time positions.<sup>28</sup> The ITSD is also involved in providing and managing the Department's telecommunication services through its fiber-optic network for both the City of Los Angeles and private companies.

The services provided by ITSD are categorized into six main areas:

- **Infrastructure:** Communications; Servers; Storage; Data Management; Disaster Recovery; and Training Facilities.
- **Applications:** Corporate; Vertical; and Infrastructure Applications.
- **Security:** Security Policy; Critical Infrastructure Protection; Risk-based Policy; Incident Management; Vulnerability Assessment and Remediation; Information Security Monitoring and Operations.
- **Projects and Processes:** Project, Incident, Problem, Change, Release, and Configuration Management; System Integration; Quality Assurance; and Business Process Improvement.
- **Administration:** Budget; Management Analysis; System Architecture; Safety; Personnel Management; and Training Management.

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<sup>28</sup> ITSD Strategic Agenda 2014-15.

- **Commercial Services:** Fiber-optic and other technology services.

## 8.4 Information Technology Strategic Planning and Governance

### 8.4.1 Strategic Plan

In 2008, the ITSD began an effort to define a strategic vision for technology infrastructure at LADWP. This effort culminated in the drafting of the ITSD Strategic Agenda, a document which presents the ITSD's vision for the Department's technology infrastructure for the next five years. The most recent version (2014) identifies five key strategic goals to pursue from 2014 to 2018, including:

1. **Operational Effectiveness:** Provide the "most appropriate services to meet customer IT needs and objectives in a cost-efficient manner," including identifying and implementing innovative technologies to meet business challenges, deploying best practices in the area of service management, while also retaining, developing, and attracting an "outstanding workforce."
2. **Enterprise Architecture:** Develop and improve "an integrated, modern infrastructure and implement an application portfolio built upon technology standards."
3. **Customer Service:** Support and help to strengthen the LADWP customer service experience of end-users (i.e. rate-payers) as well as ITSD's internal customers within the Department.
4. **Security and Continuity of Services:** Drive to maintain "the confidentiality, integrity and availability of information and communications to support LADWP operations."
5. **Technology Leadership:** Provide leadership in setting the direction of the Department's technology in alignment with its broader strategic goals and direction.

While the Strategic Agenda defines a vision and general direction for the ITSD for the next five years, it has a limited scope compared to comprehensive strategic planning documents adopted by similarly situated utilities. In particular, the Strategic Agenda does not provide a detailed outline of the resources and direction required to comprehensively meet the needs of the organizations that ITSD serves.

Navigant recommends that ITSD expand the Strategic Agenda into a comprehensive IT Strategic Plan that addresses major technology initiatives, desired outcomes, performance metrics, and specific target dates for key activities. To the extent that a formal LADWP Strategic Plan is developed per Navigant's recommendations in other Survey chapters, the IT Strategic Plan should align with that plan and define the IT resources and capabilities that are needed to achieve LADWP's overall strategy.

In addition, many utilities have developed a Technology Roadmap that provides an overview of the major technology initiatives required to achieve the IT Strategic Plan. Specifically, this document provides the timing for these major initiatives and can be used to develop IT-related budgets for the coming years. In addition to a comprehensive strategic IT plan, Navigant recommends that the Department develop a Technology Roadmap to support enterprise-wide IT and technology investments and operating costs.

### 8.4.2 Governance

While the Department employs project-level governance and oversight, our understanding is that the Department lacks an executive-level steering committee to help establish, monitor, and evaluate the

overall technology strategy across a long-term horizon. The absence of such a governance structure leads to a lack of clarity in strategic direction for the use of technology within the organization and may result in inconsistent alignment of IT goals and objectives with those of the Power, Water, and Joint System more broadly. Over the past seven years, an informal approach to IT governance has been employed by the Chief Information Officer (CIO) to gain support for the Department’s IT needs. At the executive-level, this practice has proven to be problematic in light of the frequent changes in Department leadership. Frequent changes in leadership have resulted in repeated changes in priorities and inconsistent support from Department leaders for major IT projects. Clear priorities and consistent support for IT are both critical factors for a robust IT strategy, as well as for providing ITSD with the necessary financial and human resources.

Navigant recommends that LADWP establish a formal, executive-level committee tasked with the following:

1. Design, align, and implement strategic plans with an adequate view towards and understanding of the joint-business requirements of the Power, Water, and Joint System.
2. Provide support for the process that identifies technology needs, justifying and prioritizing IT initiatives in the form of projects.
3. Discuss and coordinate annual budgeting processes to ensure that adequate financial and human resources are allocated to ITSD to adequately support the strategic priorities and activities of the Power and Water System, as well as the broader Joint System organization.
4. Include a Technical Advisory Committee that focuses on the establishment of standards and technology direction for the Department.

## ***8.5 Primary Applications and Suites Supported***

The ITSD manages a portfolio of over 160 corporate and business applications to support the business activities of the Department. Dedicated ITSD teams of analysts, developers, programmers, and contractors manage these applications. Applications are organized into three categories:

- Vertical Applications (Customer Service, Asset and Work Management, Capital Project Management, etc.);
- Infrastructure Applications (Web access, Email, GIS, etc.); and
- Corporate Applications (Joint Systems— Enterprise Resource Planning, Human Resources, Payroll, etc.).

### **8.5.1 Vertical Applications**

The Department has engaged in several projects to replace legacy systems. Most notably, the Customer Information System (CIS) was implemented and the Asset and Work Management systems is being upgraded.

The ITSD continues to address the issues that emerged as a result of the launch of the CIS system, including fixing meter configurations, adjusting calculations of bills and billing errors, and by returning collection activity to focus on customers owing the Department \$250 or more for more than 60 days. ITSD actively manages the outstanding issues with this implementation, working closely with the

Customer Information, Communication and Technology (CICT) group, which resides within the Customer Service Division (CSD). At the time of this writing, work continues to identify and remediate defects and test system functionality in the hopes of bringing increased stability to the deployment and achieve a base level of CIS functionality.

The ITSD is also in the process of upgrading and integrating the Department’s asset and work management systems (i.e. Maximo) for the Water and Power System. The project launched in 2011 and is expected to be complete before the end of the year. This system upgrade will provide a consistent approach to asset management across Water and Power by unifying the relevant data into a common application and instance.<sup>29</sup> Navigant believes that adopting a consistent approach to asset management activities across the Power and Water Systems is an important and valuable objective, which can be further facilitated through the adoption of common technologies. ITSD should ensure that the Water and Power Systems take advantage of this collaborative approach.

### 8.5.2 Infrastructure Applications

ITSD has also been working on the standardization of geographic information systems (GIS) to improve enterprise level planning, work and asset management, customer visibility and emergency response. While the Water System uses GIS, the Power System is still in the initial stages of implementation. According to the IT Strategic Agenda, the core GIS software has been acquired for Power, an RFP has identified the consultant to lead the implementation, and the project is underway. However, the Power System has not allocated resources to manage its GIS program, which is delaying the implementation process. ITSD should continue to consolidate and integrate the Water GIS into a common standard, and assure that the Power GIS is consistent with this standard. The silos between the Water and Power System will also need to be overcome if the Department is to optimize the information sharing synergies which can be leveraged through the integration of GIS across Systems.

Navigant found that the Department’s use of web services is limited but expanding. For example, the ITSD has developed MYDWP, an intranet portal for employees to review data and information from Human Resources, Supply Chain, and Retirement Systems. ITSD is also developing a MYDWP mobile application to provide employees with remote access to this information.

### 8.5.3 Corporate Applications

Perhaps the biggest challenge the ITSD and the Department must face with regard to technology infrastructure will be the implementation of an enterprise resource planning (ERP) system, which would consolidate and upgrade old and unsupported platforms, including payroll, human resources, financials, and budget.

The ERP implementation will be a large and complex undertaking for the Department, similar to that of the CIS implementation. While lessons learned from CIS implementation will hopefully improve the Department’s ability to implement the ERP system, ITSD should do extensive planning to ensure that the project has the appropriate resources and a rigorous approach to project management. Specifically, the ITSD should develop a detailed project plan, including end of life planning, the identification and documentation of business requirements, resource planning, and deployment timelines. In addition, a

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<sup>29</sup> In a technical context, an Instance can be defined as a single copy of a running program. Multiple instances of a program mean that the program has been loaded into memory several times.

clear set of business requirements should be documented, working closely with stakeholders across the Department. Prior to launching the ERP, the ITSD should allocate adequate testing resources to ensure the system is functioning properly and that the staff are comfortable with the system processes. These measures will reduce the risks associated with implementing such a large system. The Department has taken some early steps to advance this implementation, including the hiring of a QA firm, the completion of a Strength, Weakness, Opportunities and Threats (SWOT) analysis, and the use of Oracle Insight to strategically implement ERP to address critical objectives and challenges.

In general, meeting future system upgrade and deployment needs will require more rigorous planning at the project and portfolio level, the ability to hire and retain specialized technology and program management professionals, a dedication to business process change, and a continuous focus on training. In the absence of these, the Department may encounter challenges related to large-scale implementation efforts.

### ***8.6 Hardware, Network, and Telecommunication Infrastructure***

Navigant found that the Department's current standards for network operations, hardware, and telecommunication infrastructure are consistent with best practices.

One of the key challenges in this area will be the integration and data migration to its new data center in Los Angeles. For example, ITSD has ten positions allocated to this effort and three of these positions are currently vacant.

The telecommunications infrastructure at LADWP has maintained a data reliability rate in excess of 99.9% across its network. ITSD able to maintain a high availability for its internal customers and third parties through its fiber optics network. Most critical in-basin telecommunications are over fiber infrastructure, with over 300 facilities fiber connected. The ITSD's continued ability to provide a high data reliability is contingent upon an adequate allocation of resources. Navigant found that ITSD staff are often diverted from day-to-day operational responsibilities because of ad-hoc projects. This finding is apparent throughout the ITSD.

### ***8.7 Portfolio and Project Management***

Portfolio and project management are critical components to successfully maintaining existing information systems and effectively managing new technology initiatives. With over 160 applications and new projects on the horizon, project management tools could be extremely helpful for ITSD to overcome its current work backlog. This backlog includes upgrading and consolidating applications as well as removing legacy systems. While some progress has been made in managing this workload, ITSD still faces challenges in this area.

A key aspect of portfolio and project management is change management, an area where ITSD has improved via a Change Management Policy and implementation of a Change Management Process that includes the Remedy software tool for receiving and tracking change requests. However, an overall IT Portfolio Management and Project Management Office has not been implemented at LADWP, although an effort has been made to do so. The ITSD is allocated limited and almost non-existent resources around project management. For example, there is only one Project Management Office (PMO) position on staff, which is also currently vacant. While the ITSD's project management approach is relatively effective, it is

lacking and ad-hoc when it comes to smaller projects, which represent the bulk of the day-to-day activities of the ITSD.

## ***8.8 Information Security and Disaster Recovery***

### **8.8.1 Information Security**

An Information Security Policy (ISP) is a common and important business policy in any organization. At the highest level, an information security policy provides management direction and support for information security across the organization. The objective of an ISP is to guide or control the use of systems to reduce the risk to information assets in terms of breaches of confidentiality, integrity and availability. Documentation of the ISP is one step in an overall information security process, which includes an information security risk assessment.<sup>30</sup> Ongoing monitoring and management of the ISP are additional steps in an overall security framework.

In 2008, the ITSD formalized an Information Security Policy (ISP or Policy) to provide protocols for managing LADWP computer systems, data, and network infrastructure. The ISP provides a foundation for standards, procedures and guidelines that govern LADWP’s information security. The Department has executed numerous updates to the ISP and developed documentation to supplement policies. While the supplemental documentation refers to the specific section(s) of the ISP to which it relates, the ISP itself does not refer to the supplemental standards, procedures, and guidelines which have been developed.

### **8.8.2 Disaster Recovery**

Emergency preparedness, business continuity, and IT disaster recovery (DR) are critical focus areas for utilities and the organizations that oversee them. Increasingly, utility organizations are exhibiting heightened risk awareness and focus on business resiliency. A variety of high-profile events over the last several years (both natural disasters and manmade events) have moved disciplines that support on-going business resiliency to the forefront of utility planning.

DR planning addresses the recovery of critical IT assets – including systems, applications, databases, storage, and network assets – given a significant operational disruption. DR is often considered the technological component of Business Continuity Management (BCM), which is defined as the management process that identifies:

- The most significant threats to an organization’s on-going operations,
- The impacts to business operations that those threats, if realized, might cause, and
- The phased and prioritized approach to service recovery.

A rigorous business continuity management (BCM) process is central to business resiliency. As an aspect of that process, a disaster recovery (DR) plan that defines the phased approach for bringing vital forms of technology back in a phased manner in the event of an emergency is critical. While the ITSD provided a variety of documents that point to emergency and disaster recovery related procedures, there is no single and comprehensive plan along with related policies, procedures, and guidelines to direct employees in the event of an emergency or disaster recovery scenario. Furthermore, the extent to which

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<sup>30</sup> Ryan Mazerik, “Information Security Policies,” General Security, April 2014.

ITSD employees are aware of or have been trained on their roles and responsibilities in the event of an emergency or disaster recovery situation is unclear.

Navigant found that accountability for DR has been decentralized, and resides in the Power, Water, and Joint Systems, and then within each Division in each System. According to the Department's Information Security Policy, the Assistant General Managers of the Systems or their designees (System Owners) are responsible for defining the business parameters for disaster recovery plans, including both the required recovery time and the required recovery point. The System Owners also must ensure that adequate back up and system recovery procedures are in place to ensure the continued operation of a System. The policy states that system operators should work with the Assistant General Managers and other System personnel to prepare disaster recovery plans. We requested, but did not receive, the current DR plans in place at the Department. Further, we learned that DR plans have not been developed consistently across the Systems or Divisions, and that appropriate DR preparation has only been developed for some System Owners. For these reasons, we believe that the Department lacks consistent protocols that define how DR plans are to be derived, tested, and maintained across the Department.

Perhaps most importantly, the Department does not have a business impact analysis (BIA), which forms the foundation of business continuity planning. The BIA specifies the impact of disruptive events on business operations, financial performance, reputation, employees and supply chains, and the systems and networks that support them. As a result, the Department's overall DR priorities are not defined. Stated differently, how ITSD would work with each System to bring back critical applications in a prioritized manner is not defined. Consistency across all lines of business in BIA, testing methodologies, reporting schedules and other aspects of BCM are all characteristics of an organization that takes BCM/DR seriously. Navigant recommends that the LADWP prioritize the development and completion of these BCM components. Refer to Volume VI on *Emergency Preparedness* for additional considerations on BCM and BIA.

## **8.9 Conclusions**

In general, ITSD is appropriately organized and performs well in many of the critical areas for which it has responsibility. Specifically, the telecommunications network, the information communications network, and the provision and maintenance of mainframes and servers are all areas that are performing well. ITSD has also placed significant focus on maintaining the current state of operations, continuously working to overcome issues with the CIS implementation, and attempting to upgrade or replace a wide variety of diverse technologies currently in use. ITSD's biggest challenge is in the area of software applications, which is due in part to the age and diversity of the applications, but also due to the absence of a clear IT governance framework and an IT Strategic Plan. Accordingly, ITSD's current focus is more tactical than strategic.

Establishing a Strategic Agenda has provided a positive step in the right direction, but a more detailed Strategic IT Plan is necessary to transform and modernize the Department's use of technology. As noted, the Department should also establish an IT executive committee structure to ensure that the Strategic IT Plan is supported by the entire organization. A central aspect of this strategic plan would include an approach to address current and potential staffing limitations, which may hinder the achievement of IT objectives.

A prioritized list of additional recommendations for improvement are included below. Some actions are already underway, but others will require additional attention and resources from the Department and the City.

#### High Priority Recommendations

- Ensure that ITSD has the staff and contracting resources to address its current system challenges as well as future upgrades and platform implementations.
- Develop an IT Strategic Plan that builds on the IT Strategic Agenda to address major technology initiatives, desired outcomes, performance metrics, and specific target dates.
- Establish an executive-level governance that is tasked with setting, monitoring, and evaluating the direction of the Department's technology infrastructure.
- Create an additional budget for ITSD to address unplanned projects and budget reallocations by project managers in the Power and Water Systems.
- Extend project management practices used for major projects to all IT projects.
- Develop a disaster recovery plan to prioritize IT functions in the event of an emergency.

#### Medium Priority Recommendations

- Remove legacy systems and consolidate applications into one version or instance for the entire organization.
- Monitor the transition period between system upgrades to ensure the removal of older instances of systems.
- Establish a formal project management office for technology infrastructure to ensure that projects are monitored and completed.
- Ensure that the Maximo upgrade establishes an enterprise asset management program that encourages communication between the Water and Power System, including linking the new version of Maximo to other systems such as GIS.
- Develop a detailed implementation plan for an enterprise resource planning (ERP) system.
- Complete the new data center to consolidate data and enhance data security.

#### Low Priority Recommendations

- Expand the "My Account" section of the website to provide customers with additional usage and billing metrics.
- Complete the development of a mobile application for employees to access MYDWP information.



## 9. Customer Service

### 9.1 Objectives & Approach

This chapter presents Navigant’s findings from a Customer Service benchmarking study, and provides a review of the Customer Service Division’s (CSD) use of technology. Customer Service continues to receive significant attention across the utility sector in response to multiple market, regulator/stakeholder, customer, and technological forces.

In many respects, Customer Service is at the “frontline” of utility operations, given the increasing number of possible touchpoints with consumers on a daily basis. That utilities will reflect high-levels of customer service is increasingly the expectation among regulators and customers alike. Meanwhile, the continued growth of new methods of interacting and conducting business with the utility bring together the topics of service quality and technology. Research reflects that customer service is at the forefront of utility continuous improvement planning, given the intersection of: 1) focus on the “customer experience” as central to providing exemplary utility service; 2) increasing stakeholder and customer expectations regarding exceptional service; and 3) the role of technology in customer service operations.

### 9.2 Customer Service Benchmarking

Our team selected 20 performance measures across six (6) areas to evaluate the Department. These areas include:

- Contact/Call Center
- Meter Reading
- Customer Billing
- Customer Payments
- Credit and Collections
- Field Service

In addition to these areas, we also included a category that focuses on the Department’s reliability, satisfaction, and employee availability.

LADWP provided 2014 results for a total of 14 of the requested 20 performance measures, which are standard metrics used across the utility industry. Collectively, these measures provide the foundation for active and on-going monitoring of utility Customer Service operations. The Department was unable to provide data on 30% of the metrics selected for our study. Navigant has been informed that work is underway to address issues with the Department’s historical customer service data. Resolving these issues may improve the results of the 2014 benchmarking reflected in our report. We encourage the Department to continue to pursue and adopt methods of improving data management practices in customer service.

A tabular representation of the benchmarking results is provided below.

**Table 9-1. Customer Service Benchmarking Results**

	LADWP	Q	Mean	Q1	Q2	Q3
<b>Contact/Call Center</b>						
Service Level (Live Contacts)	NA		64.7%	75.9%	66.9%	61.4%
Abandonment Rate (Live Calls)	NA		6.6%	4.4%	5.5%	9.5%
Average Speed of Answer (Live Contacts)	1362.0	4th	100.9	46.0	90.0	111.5
Percent of IVR Self-Service Contacts with a Completed Transaction	41%	3rd	46%	62%	45%	35%
First Contact Resolution Measure (Contact Center Process)	NA		78.0%	85.0%	78.0%	72.0%
<b>Meter Reading</b>						
Annual Meter Read Rate	94.0%	3rd	92.3%	98.4%	96.5%	93.1%
Meter Reading Error Rate	NA		0.13%	0.04%	0.10%	0.19%
Meters with Chronic No Read (no bill 3-6-9 billing periods)	0.84%	2nd	1.35%	0.01%	0.84%	1.10%
<b>Customer Billing</b>						
Percent of Bills Issued Electronically	14.4%	3rd	18.5%	22.6%	16.1%	14.4%
Percent of Bills with Post-Bill Adjustments Due to Errors	NA		0.240%	0.098%	0.159%	0.309%
Percent of Bills Mailed Within Billing Window	98.0%	4th	98.95%	100.00%	99.62%	99.34%
Percent of Bills Estimated	4.9%	4th	4.39%	0.82%	1.28%	4.9%
<b>Customer Payments</b>						
Percent of Payments Received from Customers Electronically	35%	4th	53%	50%	54%	58%
<b>Credit and Collections</b>						
Write-offs as Percent of Revenue	NA		0.95%	0.38%	0.79%	1.40%
Days Sales Outstanding	36	2nd	35	31	36	40
Percent of Customers in 30/60/90 Days Arrears	56%	4th	28%	15%	27%	37%
% of Accounts Scheduled for Disconnect Actually Disconnected	2.6%	4th	44%	42%	44%	49%
<b>Field Service</b>						
Percent of Field Service Orders Can't Get In (CGI) or Unable to Complete (UTC)	66.9%	4th	18.83%	3.70%	10.83%	20.61%
<b>Overall Business – Customer Satisfaction</b>						
Customer Satisfaction - J.D. Power - Business	646	3rd	657	670	659	645
Customer Satisfaction - J.D. Power - residential	641	4th	651	661	647	643

As reflected above, where data were provided, the Department was found to generally fall in the 3<sup>rd</sup> or 4<sup>th</sup> quartile for the selected measures.

### 9.3 Review of Customer Service Technology

Technology plays a central role in moving customer service organizations toward leading practices, and delivering core operations in a more optimal manner. The current and proposed future state of the Department’s technology infrastructure is a key determinant of how customer service will be delivered and how work will be conducted. As noted, the Department has commissioned a number of studies that provide specific guidance on how technology can be further optimized to meet strategic objectives (including how to move the company toward more customer-focused service). According to one of these studies, the Department has an opportunity to deploy technology more effectively to meet their goals: The CEB Study (2014) found that *Technology Management*<sup>31</sup> was the fourth highest opportunity area ranking, behind *Live Phone Experience*, *Quality Assurance*, and *Service Organization Culture*.

Focusing on technological change in concert with business process improvement and enhanced staffing, we believe the Department has an opportunity to make significant progress on customer service objectives. Pursuing excellence in customer service should be a continuous goal of the Department. We reiterate many of the goals recommendations described in the CSD strategic planning documents and findings from other assessments, and offer several additional recommendations below.

<sup>31</sup> The CEB defined the Technology Management assessment area as follows: “We make technology investments to better enable our existing processes—technology does not define process. We methodically approach vendor-fit evaluations, technology investment priorities, and implementation plans.”

### High Priority Recommendations

- Evaluate and more clearly define functional accountabilities for key activities between CICT and IT – confirm and draw “brighter lines” between functional responsibilities.
- Create an overarching strategic plan for customer service technology for the next 5-years (including prioritized technology requirements (remediation and new systems), high-level deployment schedules, and estimates of required resourcing (staff and capital) requirements).
- Strengthen the system selection process, and confirm business requirements as a central driver for system selection.
- Continue to develop the training program for CSD, focusing on both technical and business-focused modules. Also continue focus on staff cross-training and staff rotation to enhance flexibility and resiliency in workforce.
- Address staffing and hiring concerns as best as possible, with particular emphasis on specific subject matter expertise and program management acumen.
- Pursue documentation and training on key business processes that align to use of new technologies.
- Measure and evaluate key business activities, processes and personnel; specify Key Performance Indicators (KPI) and define performance targets; incorporate benchmarking as a normal aspect of performance evaluation.
- Conduct workload / workforce balancing analysis to more precisely understand the number of staff and types of skills required.

## 10. Economic Development and Community Outreach

### 10.1 Objectives & Approach

This chapter presents Navigant’s findings on Economic Development and Community Outreach for the IEA Survey. Economic Development and Community Outreach are separate, but related, program areas, each playing a central role in helping the Department achieve its Mission to be a vital and active member of the communities it serves, and supporter of the continued growth of the local and regional economy. Further, these functions help connect the Department to broader City goals and objectives, as forwarded by the Mayor’s Office of Economic & Workforce Development and other departments.

Navigant reviewed the organizational structures, accountabilities, policies, and business practices adopted by the Department to complete this chapter. We also conducted interviews with Department staff to gain further insight into current and proposed economic development and community outreach practices. The goal of this assessment is to identify and recommend opportunities for improving the Economic Development and Community Outreach disciplines at the Department. A summary of findings and recommendations is provided at the conclusion of this chapter. Insights from interviews and document review complement these assessments. For the IEA Survey, we present our findings on Economic Development and Community Outreach in separate sections. Each of these sections includes a discussion on the following:

- **Common program features:** An overview of the common features of Economic Development and Community Outreach in areas such as planning, operations, performance management, goal-setting, and analytics.
- **Economic Development and Community Outreach in utilities:** How utilities typically design and implement these programs (with particular attention given to municipal utility peers).
- **A review of these programs at the Department:** Assessment of the Department’s programs in each area, followed by recommendations for improvement.

A summary of findings and recommendations is provided at the conclusion of this chapter.

### 10.2 Economic Development and Community Outreach Overview

The roles of each of the groups can broadly be defined as follows:

- **Economic Development:** Design, execute, and monitor plans and programs that leverage Department resources to help attract, retain, and expand businesses in the City of Los Angeles.
- **Community Outreach:** Design, execute, and monitor plans and programs to provide information to – and gather feedback from – the communities the Department serves on key matters.

These groups design and execute plans and programs that help align with – and advance and build support for – the Department’s broader strategies in areas such as energy efficiency, water conservation, among others. Importantly, Economic Development and Community Outreach are supported by the Department’s Communications Department, which is charged with formulating and executing communication strategies.

### ***10.3 Economic Development***

Economic Development is defined as the allocation of limited resources (including land, labor, capital and entrepreneurship) to create a positive effect on the level of business activity, employment, income distribution patterns, and fiscal solvency.<sup>1</sup> It is a process of deliberate intervention in the normal growth cycle, aimed at accelerating the process and optimizing overall economic impact. In any community, Economic Development activities typically involve a number of stakeholders, including elected officials, Chambers of Commerce, venture capitalists, banks, colleges & universities, and utilities.

A review of public power and water utilities and related agencies confirms the importance of economic development in strategic planning and on-going operations. The country's largest municipal and cooperative utilities have focused programs in economic development, while the American Public Power Association (APPA), Large Public Power Council (LPPC), and American Water Works Association (AWWA) each promote the role of public power and water utilities in fostering Economic Development.

#### **10.3.1 Utilities and Economic Development**

Public power and water utilities are seen as central to local and regional Economic Development efforts. Economic Development is typically featured prominently in the vision and mission statements of municipal, cooperative and other public utility agencies. Business attraction, retention, and the facilitation of urban renewal are just some of the goals of municipal utility development programs.

#### **10.3.2 Features of an Economic Development Program**

Economic Development programs are defined by several key features, including:

- A clear Vision and Mission, which reflect the guiding principles of the program. The Vision supporting an organizations' Economic Development plan is directly aligned to organizational and local and regional government objectives.
- Strategic plans for each major program area that tie to the Vision. Municipal organizations adopt Economic Development Strategic Plans that reflect overall corporate objectives and tie-in to local economic and political objectives.
- Programs for each major strategy that are designed to meet organizational and City objectives. Utilities give focus and priority to programs with significant and direct business benefit, which also align to a broader vision (e.g., leadership in renewable resources).
- An organization and budget aligned to program delivery and strategic goals. Economic Development groups are staffed by experts in the discipline, with the number of FTE positions commensurate with the vision and objectives of development activities.
- On-going analytics and reporting to support decision-making and performance. Programs are defined by the use of continuous monitoring and evaluation, which provide a basis for accountability and transparency in the use of resources.

These facets are closely aligned and adjusted as needs, resources, and performance change over time.

### 10.3.3 Peer Practices in Economic Development

Economic development at utilities can encompass a wide range of initiatives, programs, and events that spur small business growth and create job opportunities for customer/ratepayers. While the direct comparison of budgets and staffing across peer organizations can be difficult and unclear, the Department generally pursues comparable types of programs as those that are adopted by peer organizations, including:

- Energy Efficiency and Conservation Programs
- Small Business Assistance Programs
- Commercial and Other Loan Programs
- Solar Initiative Programs
- Business Attraction and Retention Incentive Rates

### 10.3.4 Economic Development at the Department

The Vision of Economic Development at the Department is driven significantly by the broader objectives of the City, the county, and other regional organizations. Department statements explicitly recognize the role of LADWP in Economic Development: *As the nation's largest municipal utility, the LADWP believes in investing in the future success of Los Angeles. The mission of the LADWP Economic Development Division (EDD) is to attract, retain, and expand businesses in the City of Los Angeles.* This mission is supported by a strategic plan, and variety of specific programs.

#### 10.3.4.1 Strategic Planning

In response to our document request, the Department provided strategic planning documentation from 2010-2011 that outlines Economic Development programs pursued by the LADWP. We believe that program vision, objectives, strategies, and tactical plans should be revised and formalized.

#### 10.3.4.2 Programs and Operations

Economic Development plans and programs (and outcomes) are distinct, based on the goals and objectives of each locality. Current strategic imperatives include an emphasis on sustaining small businesses, strengthening the business environment – while encouraging uptake in the Department's programs. As noted above, the types of programs pursued by the Department appear to align to those adopted by peer organizations. However, the total budget available for these programs appears to be smaller than that for other POU's. In addition, the Department's ability to measure direct and indirect impact of the programs appears to be limited.

#### 10.3.4.3 Organization and Budget

Research suggests that staffing plays a significant role in the performance expectations – and actual performance – of Economic Development organizations. In general, the larger the staff size, the greater the results. To this end, the EDD should assess current staffing levels, and align the program targets to staff required to meet development goals. Our analysis reflects that the EDD has been unable to spend its annual budget over the last several years, due in large part to challenges with contracting. Specifically, the EDD spent less than half of its budget in 2009, 2010, 2011 and 2013. While spending has improved in 2014 and 2015, the EDD has not been able to spend its budget.

#### ***10.3.4.4 Analytics***

Analytics and reporting – and the process of delivering insight to stakeholders, decision-makers, and program owners – are key aspects of an Economic Development program. This includes establishing targets for programs, assessing performance versus those targets, and broadly engaging in performance management. We believe the measurement, reporting, and analysis activities within the EDD should be formalized and strengthened to include additional metrics, targets, benchmarks, and routine reporting versus clear goals. Consistent reporting against these targets (and also benchmarking of performance) should also be adopted.

### ***10.4 Community Outreach***

Community Outreach is a multifaceted approach to consistently engage stakeholders on an organization’s strategies, policies, or solutions. Through a variety of methods, outreach programs deliver and receive information to: 1) inform or influence behavior, and/or 2) gather and assess feedback. Community Outreach is often considered a subset of Public Relations, which is conducted to solicit support, shape public opinion, and/or request community participation (e.g., involve the community).

#### **10.4.1 Utilities and Community Outreach**

In today’s environment, utilities are confronted by significant strategic challenges and opportunities that require a clear and consistent dialogue with ratepayers, community groups, business leaders, and other stakeholders. Community Outreach is a central aspect of a utility’s overall approach to engaging the public in a two-way dialogue on a variety of topics. In a utility setting, community outreach efforts are often organized around significant projects and programs including rate increase proposals, design and execution of resource plans, roll-out of significant conservation and efficiency initiatives, and emergency restoration efforts (among many others).

#### **10.4.2 Features of a Community Outreach Program**

Outreach programs are typically comprised of the following components:

1. **Goals:** Clear articulation of the goals of outreach, which are closely aligned to strategic vision of the programs that the outreach supports.
2. **Target Audiences:** A comprehensive understanding of the various stakeholders for each outreach effort.
3. **Messages:** The key themes associated with each of the outreach efforts, which are intended to inspire and drive support.
4. **Format and Distribution:** Coordination of the key messages, how they will be catered to be most effectively delivered to the Target Audiences.
5. **Evaluation:** Continuous feedback between the delivery of the messages and the effectiveness versus goals and objectives.

### 10.4.3 Peer Practices in Community Outreach

Given their role in the communities in which they serve, municipal utilities conduct routine outreach efforts, with significant focus on providing various stakeholders insight into – and gathering feedback on – major programs and significant events. There are a large number of outreach methods, which are used optimally to meet the specific communication need. Examples include direct mail campaigns, corporate and “special topic” websites, social media, among many others.

### 10.4.4 Community Outreach at the Department

#### 10.4.4.1 Strategic Planning

The Department has not established a formal strategic plan for its community outreach activities. However, the Department’s community outreach efforts can be categorized in five main areas:

- **Stakeholder Engagement:** This is done primarily through the Los Angeles Neighborhood Councils (LANC) and other forums for information sharing.
- **Energy Efficiency and Water Conservation:** Reduce and optimize water and electrical use, both through water conservation measures, and increased reliance and adoption of renewable energy sources and solutions to generate power.
- **Rates & Water and Power Infrastructure:** Increase water and power rates to enable the Department to fund and pursue capital projects to improve and update its aging water and power infrastructure.
- **Safety:** Increase awareness related to electric safety tips, emergency and earthquake preparedness, and the health effects of electric and magnetic fields.
- **Educational Programs:** Help secure a knowledgeable base of residential and business customers to better understand and appreciate water, energy, and environmental issues.

The lack of a formal and centralized plan may be due to several factors, including the decentralization of responsibility for certain outreach initiatives to the Power and Water Systems.

#### 10.4.4.2 Program and Operations

The Department utilizes a variety of outreach communication methods, which are in large part driven by the Communications Department. These include traditional methods (e.g., newsletters, websites, press releases) and emerging methods (e.g., social media), which are used in targeted fashion to address specific constituents or needs. Close interaction with the Los Angeles Neighborhood Councils (LANC) is one of the most critical functions of the Department’s Community Relations function; workshops on discrete matters such as the Integrated Resource Plan or rate action are additional focus areas. The Department should continue to pursue and adopt methods of engaging with stakeholders on a routine and consistent basis, outside of special events such as rate actions or resource planning reviews.

#### 10.4.4.3 Organization and Budget

One of the most significant roles of the Community Outreach function and its staff is related to routine and on-going engagement with the neighborhood councils. In consideration of the scope of the mandates



of the Department and number of customers which it serves, Navigant believes that the size of the IACO staff should be revisited. For example, only two (2) of the Intergovernmental Affairs and Community Outreach (IACO) staff are dedicated to representing the Department across the ninety-five (95) Neighborhood Councils in the City. The limited staff resources may result in inconsistent engagement across the set of councils (with the potential for smaller, and less influential Neighborhood Councils receiving less attention than larger Neighborhood Councils). Further, given the significant size and potential impact of the capital programs in both the Power and Water Systems, additional staff should be considered to actively manage the outreach efforts around these programs.

#### ***10.4.4.4 Analytics***

At present, Community Relations programs do not appear to be consistently assessed and managed in relation to a set of cost, effort, or performance metrics. Through our document request, we did not receive reports that reflect a consistent analysis of the impact from Community Outreach efforts in relation to goals and objectives. As with Economic Development, Navigant believes that specific goals and targets should be established for Community Outreach programs.

### ***10.5 Conclusions***

Economic development and community outreach are key activities for municipal utilities. This is particularly true as MOU's are seen as contributors to the goals and objectives of local government and the communities they serve. Further, we believe that attention on these activities has increased in recent years in line with the recovery of the economy after the Great Recession of 2008 and in response to the nature of current and future challenges in the largest municipalities in the US – including Los Angeles.

Our recommendations in each of these areas focus on strengthening the foundational aspects of program strategy, design, implementation, and monitoring. This would include a dedicated strategic planning effort (which would dovetail with the Department's and City's overall goal-setting activities). It would also include design and clear specification of programs on an annual basis (which would include targets for program performance), and the consistent reporting of program performance to Department, City, and customer stakeholders. We further recommend greater focus and diligence on budgeting and budget monitoring in these areas. Transparency and financial rigor in these areas is important in relation to the Department's overall goals of exhibiting greater focus on the customer, as well as dedication to financial controls (reflected in consistent reporting of performance versus goals and targets).

In addition, we also believe that additional focus in these areas will clarify the number and type of staff required to deliver target programs. From a clear inventory of programs and desired timing to meet objectives, the Department can identify the resources required to deliver. Further, given that some level of decentralization has occurred in each of these areas, we recommend that the Department clearly determine accountability for development and outreach activities. While the "ways of working" between these functional groups and the Power and Water Systems may be known informally, a thorough review of business processes will improve service delivery and clarify roles and responsibilities.

At the highest level, we encourage the Department to reassess these areas in terms of their current and potential role in meeting the goals of the utility and the City.

## High Priority Recommendations

- Develop a Strategic Plan for Economic Development and Community Outreach at the Department.
- Confirm goals and objectives for all programs in each area.
- Define and launch foundational aspects of a performance management program for each functional area and each program, including:
  1. A set of rigorous Key Performance Indicators and targets that focus on benefits-derived for each program given a level of cost.
  2. Recurring performance reports (including distribution lists).
- Improve budget monitoring and assessment practices in coordination with defined targets and metrics.

## Medium Priority Recommendations

- Complete a thorough staffing assessment to determine the appropriate level and skill set of staff required to execute the strategic plan and programs identified above.

## Low Priority Recommendations

- Engage in a benchmarking effort for these areas, working closely with Corporate Performance.

## 11. Rates Benchmarking

This section of the IEA Survey presents the findings of a water and power rates benchmarking study (the Study) conducted by Navigant. In particular, the Study includes:

- A comparison of LADWP’s monthly bill for power and water services, for the residential, commercial and industrial customer classes against selected comparable utilities (“the peer panel”). Monthly bills were computed for the Fiscal Year 2015/2016<sup>32</sup>.
- A comparison of the Department’s electric and water rate structures against the peer panel companies.
- An assessment of electric and power rate drivers in order to provide context for the rate levels of the peer panel companies as compared to LADWP.
- A review of the incentives for water and power conservation provided by the rate structures of the peer panel.

Navigant’s proposal for the development of the peer panel explicitly envisioned the selection of utilities operating in the Los Angeles area, as well as utilities with similar water and power supply constraints operating in Northern California, San Diego and neighboring states. Another key metric considered for the development of the peer panel was the similarity in rate setting mechanisms and cost structures. Rate setting mechanisms and cost structures can differ significantly across the utility industry, especially between Municipality Owned Utilities (MOUs) like LADWP and Investor Owned Utilities (IOUs). Further, the cost structure associated with running a private enterprise usually results in higher rates for IOUs. Finally, a major difference between California MOUs and IOUs is their generation mix. The three California power IOUs, Southern California Edison (SCE), San Diego Gas & Electric (SDG&E) and Pacific Gas & Electric (PG&E), have largely or fully eliminated coal from their generation mix while many Southern California MOUs, including LADWP, still heavily rely on electricity generated by cost competitive coal power plants. Coal has been, and is still one of the most cost competitive energy source for power generation and constitutes one of the key drivers behind the competitiveness of many MOUs electric rates.

These differences in rate setting mechanisms, cost structures and generation mix can result in large rate level disparities between California MOUs and IOUs, and justify the creation of a peer panel composed exclusively of MOUs.

However, comparing the Department against SCE, SDG&E and PG&E can be valuable since:

- All four utilities are all large size utilities supplying power to some of the largest California metropolitan areas.
- LADWP is making the same transition away from coal that the IOUs have now completed, as well as strong investments in infrastructure and reliability. Therefore, comparing their rates is instructive in illuminating future cost drivers LADWP ratepayers will face as the Department moves toward even cleaner and more reliable systems.

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<sup>32</sup> Starts July 1, 2015 and ends June 30, 2016.

- LADWP and SCE are operating in neighboring service areas.
- It provides a point of reference to the public since most electric rate benchmarking studies involving California utilities published to date have included the three California IOUs.

To address these intricacies, Navigant created three peer panels: one water peer panel and one power peer panel composed exclusively of MOUs, and one power peer panel including MOUs as well as SCE, SDG&E and PG&E.

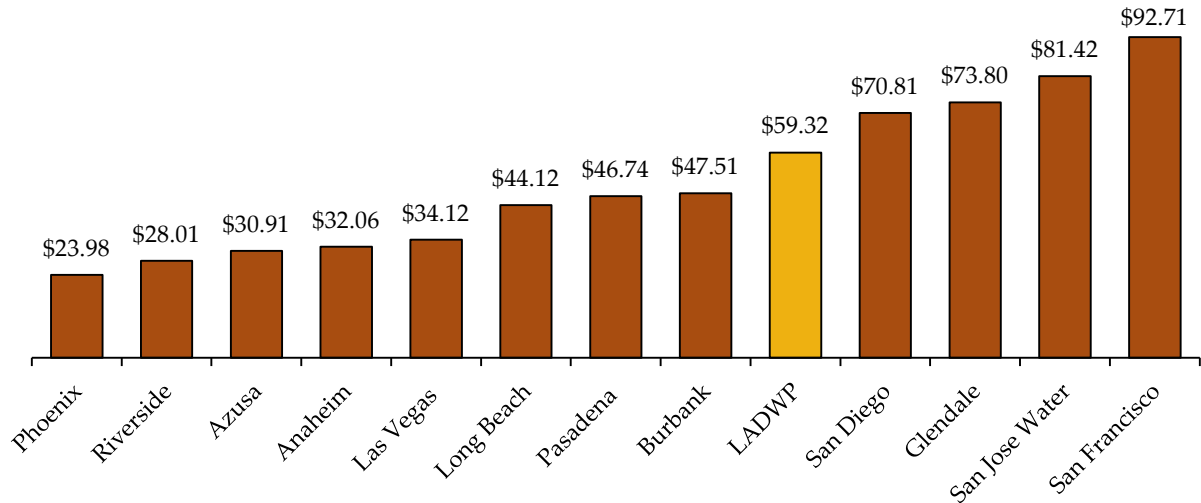
The Department has managed to maintain a strong and stable revenue stream over the last decade despite a limited number of rate increases. However, LADWP – and the vast majority of water and power utilities operating in California and across the Southwest of the United States - is currently facing a number of challenges on both the water and power sides that require significant Capital and Operations and Maintenance (“O&M”) expenditures related to the maintenance and replacement of its aging infrastructure, and the compliance with stringent regulatory mandates. Further, the Department faces a unique set of challenges related to:

- Its age. Los Angeles is one of the oldest metropolitan areas in the Southwest and faces specific aging infrastructure replacement needs, such as the renewal of a large number of above ground power lines.
- Its diverse service area. The diversity of LADWP’s geographic area demands specific operational requirements such as the maintenance of power transmission lines in mountain areas and greater water pumping needs in hilly areas.
- Its vertically integrated structure. LADWP owns and operate its own generation, transmission and distribution systems, and is therefore responsible for the maintenance, repair and replacement of these assets.

The comparison of LADWP’s monthly bills for residential water services shows that LADWP’s water rates are on the high end of the peer panel overall but the lowest for residential customers among California major metropolitan providers. As stated above, one of the primary drivers for LADWP’s higher rates, is the age of its infrastructure. Some utilities in the peer panel, such as Phoenix, Riverside and Las Vegas benefit from a newer infrastructure with flatter terrains and likely have fewer leaks and breaks per mile, lower overall O&M cost due to fewer pumping needs and fewer pressure zones. In addition, they currently are not confronted with the significant capital expenditures the Department faces to replace its aging infrastructure.

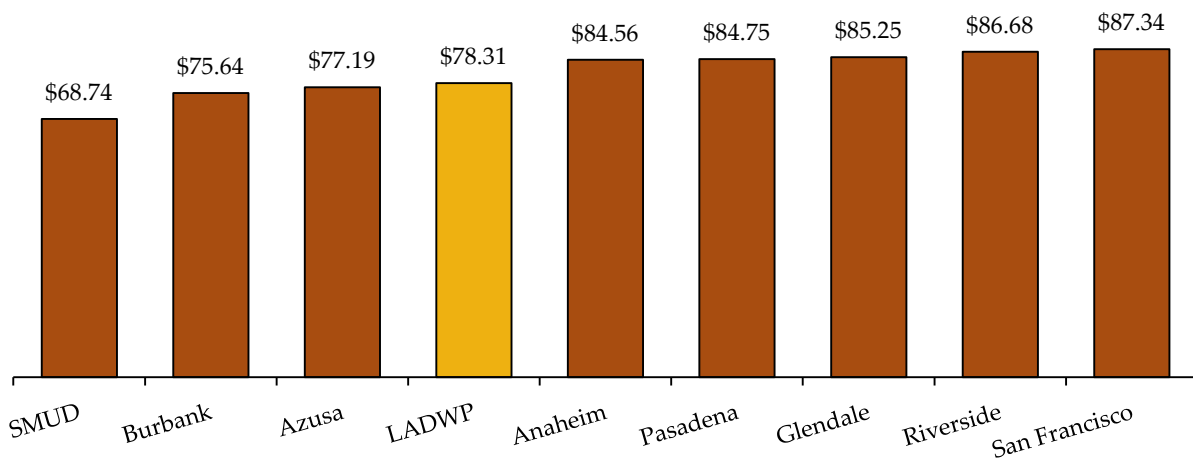
Another key rate driver is LADWP’s reliance on water purchases from the Metropolitan Water District (MWD) for most of its water supply. According to Navigant’s findings, MWD purchases represent the second most expensive water source in California, behind ocean water desalination. While MWD pricing is outside the direct control of the Department, LADWP is addressing this cost driver by making large investments in its local water supply which will reduce its reliance on MWD over time. The Department is planning on cutting in half its MWD water purchases by 2024 through increased conservation, recycled water, and stormwater capture, and is actively working on the rehabilitation of the San Fernando groundwater basin.

**Figure 11-1. Average Monthly Residential Water Bill (12 HCF/mo. – ¾ meter)**



LADWP’s power rates compare positively against those of the peer panel companies. However, nearly half of the Department’s generation mix is currently sourced from the Navajo and Intermountain Power Project (IPP) coal power plants, which represent a very cost competitive source of energy. To meet environmental goals and regulations, LADWP will be replacing coal through a combination of energy efficiency, renewable energy, and natural gas within the next 10 years<sup>33</sup> and will significantly increase its share of energy generated through utility scale solar PV. While this strategy is in line with LADWP’s and the City’s environmental goals and supported by the relatively low levelized cost of energy (LCOE) associated with these two generating technologies, the transition from coal to natural gas will come at a cost to LADWP’s ratepayers since the new gas-fired capacity replacing the Navajo and IPP coal power plants will not be as economical.

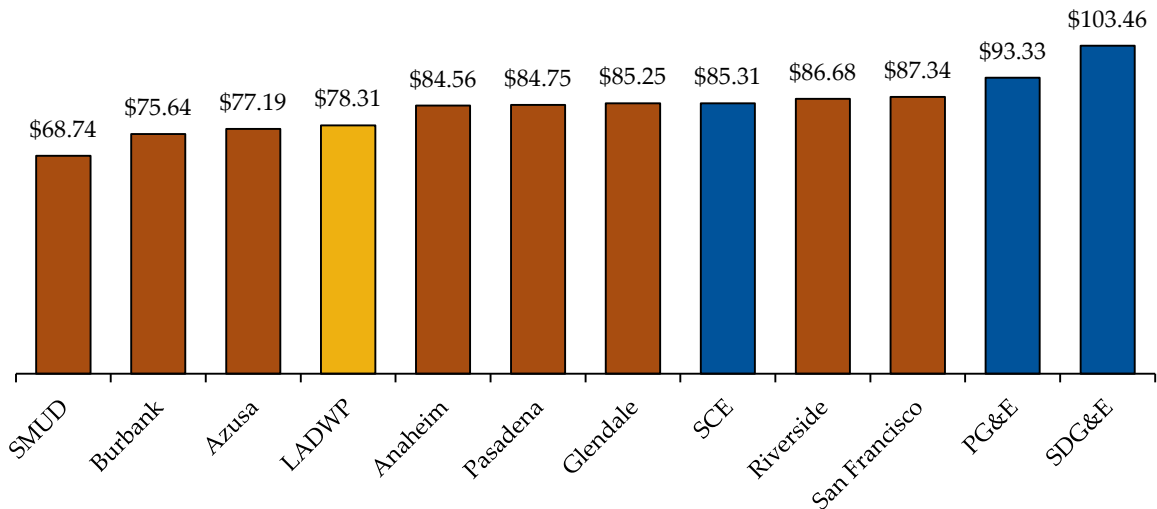
**Figure 11-2. Average Monthly Residential Power Bill (500 kWh/mo.) – Power Peer Panel A**



Note: Power Peer Panel A excludes IOUs.

<sup>33</sup> LADWP has finalized the sale of the Navajo Generating Station but is entitled to power from the plant until July 1, 2016, and is planning on divesting from IPP by 2025 according to the Department’s 2014 Integrated Resource Plan.

**Figure 11-3. Average Monthly Residential Power Bill (500 kWh/mo.) – Power Peer Panel B**



Note: Power Peer Panel B includes IOUs.

Finally, Navigant assessed LADWP’s rate structures against those of the peer panel companies. LADWP’s water and electric rate structures appear to be more complex than those of its peers. Both the power and electric rate ordinances can be quite challenging to interpret without a certain degree of familiarity with utilities’ rate structures, primarily due to the use of a large number of rate adjustment factors. As a result, it can be challenging for LADWP’s ratepayers to understand how their water and power utility bills have been developed. However, each rate adjustment factor is tied to specific water and power programs which can help ratepayers bridge the gap between their monthly bill components and these specific programs.

While LADWP’s rate structures appear quite complex, they appropriately support the City’s and Department’s water and power conservation goals. LADWP uses seasonal rates for both water and power, and implemented shortage year water rates in order to incentivize their customers to limit their water and power usage.

Overall, this study shows that the Department’s rate levels are reasonable when compared to the peer panel, especially given LADWP’s unique set of challenges related to its size and the characteristics of its service area. However, it is likely that the Department’s rates will increase as it seeks additional funding to address current and new challenges, including the maintenance, repair and replacement of its aging infrastructure, the transition from coal to natural gas and the development of its local water resources. In the future, the Department’s rates should be examined against the challenges and regulatory requirements it faces, while ensuring that they accurately reflect the costs of providing water and power supply services to its customers. Low rates are not a desirable goal if they are inadequate to provide the level of service required to meet the policy goals of the City of Los Angeles.

## 12. Conclusion

The 2015 IEA Survey provides an operational and strategic assessment of the Water, Power, and Administrative Infrastructure at the Department. Navigant’s major findings from the assessment are highlighted below. Throughout the Survey, we recognize the significant challenges currently facing the Department as it pursues increasing amounts of renewable energy, modernizes the power supply and delivery infrastructure, seeks secure and diverse water supplies, and contends with retirement, procurement, and budget constraint issues. In this challenging environment, Navigant identified a number of notable achievements:

- The Department’s water and power resource goals are well-developed and contain significant and appropriate initiatives, which are in alignment with key policies of the City of Los Angeles and have been well-communicated to stakeholders.
- Navigant considers the Department to be moving in the right direction for a California utility in this complex and transformational time. In particular, it is proceeding with the difficult transition from coal generation to renewable resources and is undertaking other power system modernization efforts, and is focusing on securing local, diverse water supplies.
- The Department has thoroughly designed strategies to accomplish its resource goals, with generally comprehensive implementation plans.
- Overall, the Department has maintained reliable water and power supplies.

While the physical infrastructure assessment and planning practices of the Department have improved, Navigant also identified a number of global issues that negatively impact the Department’s ability to carry out its current and planned operations and activities. Global issues include the following:

- **Governance:** LADWP is hindered by its governance structure, which is complicated largely by multiple layers of City authority and opaque accountability. The Department also faces an inadequate hiring processes, lacks adequate reporting and transparency, and operates without sufficiently centralized internal authority and controls.
- **Siloed Operations:** Navigant found that distinct organizations within LADWP function independently from one another so that knowledge, personnel, processes, and technology are not transferred between them. By operating in siloes, LADWP is less efficient than it otherwise could be.
- **Program Implementation at Scale:** Navigant found that the Department does not currently have the policies, processes, and personnel in place to support the full implementation of its large-scale plans. The ability to meet future Power and Water System needs will depend on clear governance, robust internal controls, transparent and defensible financial processes supporting rates, strong program management in capital projects and other disciplines across the utility, and the ability to hire exceptional candidates for key roles. The Department has begun to take action, but solutions so far have been made primarily on a program-by-program rather than Department-wide basis. Navigant recommends that LADWP focus on a comprehensive, organizational approach to putting needed tools and resources in place.

We believe the findings and subsequent recommendations made for each focus area of the IEA Survey will address these issues and improve Department operations. Major recommendations commonly include defining, formalizing, and creating centralized authority for the Department's policies and processes; improving documentation, reporting, and accountability; and identifying risks. In the *Governance* chapter, we also set out a roadmap for the City to begin a long term governance change process at LADWP. Because the infrastructure plans themselves are generally robust, it follows that the majority of our recommendations are concerned with establishing a more consistent and controlled capacity to implement them.

Past IEA Surveys have lacked the accountability needed to ensure that these recommendations are pursued. Accordingly, we recommend that the City Council and Joint Administrators, in conjunction with the Corporate Performance group at LADWP, oversee the progress made against these recommendations over the next five year period. As suggested in the 2008 IEA Survey, a program management approach to the implementation of recommendations—including a quarterly update to the Joint Administrators and City Council on progress to-date—is imperative. Further, Navigant recommends tying key performance metrics across the Department to rates, creating a clear motivation for LADWP to report on progress and efficiently implement solutions to these challenges.