



MASTER PLAN

Utilities Undergrounding Program

City of San Diego – Transportation & Storm Water Department

December 2017

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Executive Summary

This Master Plan is the governing document for how the Utilities Undergrounding Program (UUP) will execute its future work. This document includes history about the program and previous master plans, program governing policies, and details about the undergrounding process. Within the Utilities Undergrounding Program Master Plan (Master Plan) the geographic boundary, estimated cost, and other parameters are established for future projects covering all areas in the City where undergrounding is needed.

This Master Plan focuses on undergrounding power distribution lines, telephone lines, cable lines, and other communications lines. It does not include transmission lines, areas outside the City Limits, or areas that have already been undergrounded. Transmission line undergrounding feasibility is discussed in this report. Cost details, for both 20A and Surcharge projects, can be found in the *UUP Master Plan Report: Technical Supplement*. The goals of this Master Plan are to align with Council Policy 600-08 (CP 600-08) for the UUP, improve planning efficiency and accuracy, prioritize projects with greatest public benefit, reduce neighborhood impact, and simplify public interface with the UUP.

This Master Plan refers to other documents and databases that are needed to manage the Program. Master Plan maps, the Master Plan GIS Data Base, and the *UUP Master Plan Report: Technical Supplement* were used and will continue to be used in the UUP for long-term planning.

Five-year planning provides a sophisticated approach to balancing a range of considerations, including efficient phasing of undergrounding work and distributing projects geographically based on public benefit factors and coordination with other projects. The advance planning results in a document titled the *Utilities Undergrounding Program Five Year Implementation Plan*. The *Five Year Implementation Plan* will list the projects that will be allocated in the next five years in a Project Allocation List. It will use the goals, objectives and strategies contained in this Master Plan. The plan will be revisited yearly to allocate another year of projects, evaluate progress, and analyze fund balance and revenue.

Future substantial changes to the Master Plan will need to be approved by Council. Non-substantial changes, such as minor project boundary adjustments or inflation adjustments, will be approved by the Utilities Undergrounding Program Director.

I. Introduction

About the Utilities Undergrounding Program

The City of San Diego (City) established the Utilities Underground Program (UUP) to ensure steady progress toward replacing existing overhead utility lines with new underground (UG) systems in all areas of the City jurisdiction. Because of the magnitude of this work, utilities undergrounding began in 1970 and is expected to continue for decades into the future.

The Utilities Undergrounding Program is managed by the City's Transportation & Storm Water Department and relies on cooperation from San Diego Gas & Electric (SDG&E) and other utilities which provide telephone, cable television, and broadband services to communities throughout the City. The California Public Utilities Commission (CPUC) has established tariff rules which require utilities to participate in the conversion of overhead lines to underground. Additionally, the City has local codes, franchise agreements, and policies which require this participation. SDG&E serves as the lead entity when multiple utilities are involved, and therefore much of the construction work is managed by SDG&E.

The following photos demonstrate the difference between utility lines above ground and lines underground, illustrating how this program aesthetically improves San Diego.



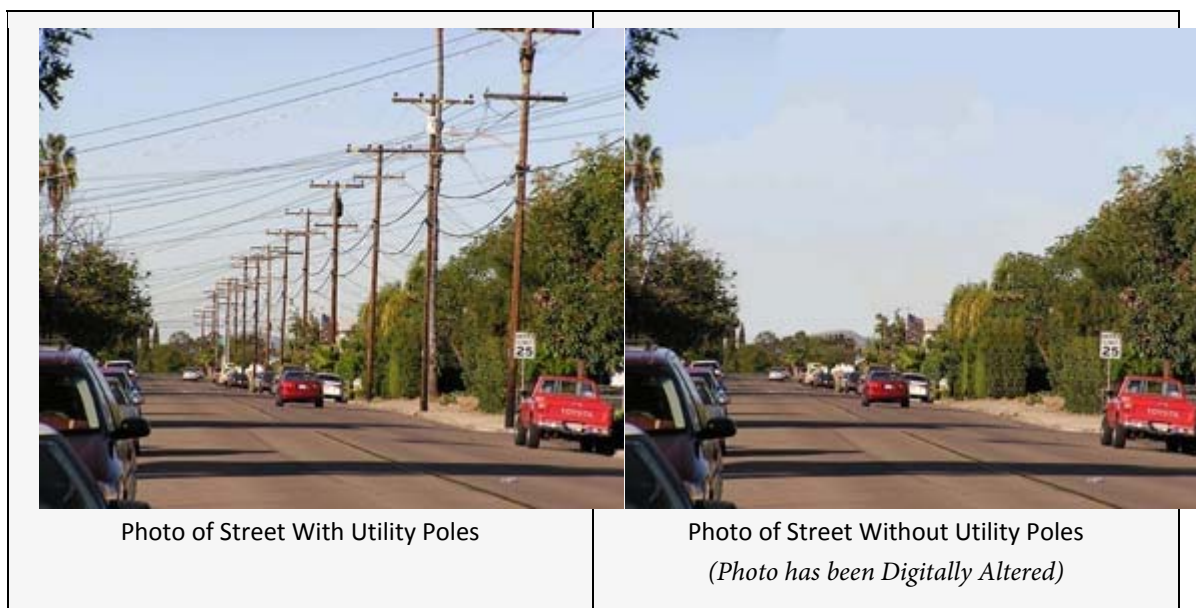


Figure 1: Examples of Streets Before and After Undergrounding

As of the end of Fiscal Year 2016, 406 miles of overhead utilities have been converted to underground, with approximately 1,000 miles of overhead utility lines remaining. The UUP has a goal of undergrounding approximately 15 miles of overhead utility lines underground throughout the City each year.

Governing Policies

The Undergrounding Program was first implemented under CPUC Decision 73078 in 1967. This Decision required that any new construction install utilities underground, unless overhead utility poles were already present. Additionally, CPUC Decision 73078 established tariff rules, titled "Rule 20," which mandated that utilities allocate funds annually for the conversion of existing overhead utility lines to underground. Part A of Rule 20 requires SDG&E to fully fund the conversion of overhead electric lines which meet the criteria of focusing on high traffic densities and tourism areas. San Diego Gas and Electric (SDG&E) funds these 20A utility conversions in coordination with the City.

In 2002, the CPUC approved an additional mechanism for funding and executing undergrounding work within the City jurisdiction (CPUC Energy Division Resolution E-3788). Council Policy 600-08 (CP 600-08) was established to guide the management of funds and execution of projects under this new funding mechanism. A Surcharge Fund was established by applying an underground surcharge component to residents' electric bills, managed separately from the City's General Fund. In addition to the undergrounding of overhead utilities, the Surcharge program also funds the resurfacing or slurry sealing of all trenched streets, installs new streetlights in accordance with the Street Design Manual Standards, installs curb ramps in compliance with Americans with Disabilities Act (ADA) requirements, and plants trees along City streets in coordination with adjacent property owners. Throughout this document, the term "Surcharge Projects" refers to the undergrounding projects that are executed using this fund.

Another governing document for the Undergrounding Program is the City of San Diego Municipal Code. In Chapter 06, Art 01, Div 05, the Code includes language that relates to the

Utility Undergrounding Program. The Code gives many details on the undergrounding process, including the Program's interaction with Council, the Program's responsibility to residents, and overall undergrounding requirements and definitions.

In addition, the City's annual budget, particularly the Transportation and Storm Water section, provides important details about the UUP. The budget includes yearly actual miles completed and targeted miles completed (15 miles per year). The Budget also gives information about all expenditures in the previous fiscal year of the program, and the planned expenditure budget of the next fiscal year.

How the Utilities Undergrounding Process Works

The Utility Undergrounding Process consists of six stages: Allocation, Public Hearing, Design, Notification, Construction, and Post Construction.

Allocation

The allocation phase is where Council approves the initiation of new undergrounding projects. This decision is based on Council Policy 600-08, which establishes guidelines for allocating of undergrounding funds. Once a project is allocated, it is expected to be fully executing according to the process described below, unless unique circumstances arise.

After Council approval of a project allocation, preliminary engineering to establish the district boundary, and environmental review in accordance with the California Environmental Quality Act (CEQA), proceed in order to prepare for the public hearing process.

Public Hearing Process

Prior to the commencement of any design work, the City Council must create an Underground Utility District. In accordance with the San Diego Municipal Code, the City Council holds public hearings in order to create an Underground Utility District. All residents and property owners within an Underground Utility District are mailed a Public Hearing Notice and a map of the proposed area to be converted to underground. The Public Hearing Notice informs property owners that they own property within an area the City Council is intending to underground. The notice explains what the possible impacts are to property owners within an Underground Utility District. Any member of the public may attend or speak at the Public Hearing. After the Public Hearing, all property owners within the Underground Utility District are sent a copy of the Council Resolution and a map of the newly created Underground Utility District.

Design Process

Once the City Council has created an Underground Utility District, a 12 to 24 month design process begins.

The start of this phase includes a "Pre-Design Meeting." Property owners receive a detailed presentation on what to expect in upcoming months. Property owners and community members are also able to communicate their concerns and preferences to representatives from the utility companies and the streetlight design team. This input is used by the design teams to guide decisions about utility box locations and streetlight locations. This is also an opportunity for community members to express any concerns or preferences regarding street tree preservation and planting associated with the project.

Throughout this phase, residents may also see engineers placing marks on the street, surveyors performing field surveys, or other professionals involved in the design process such as those coordinating with property owners to plan the construction on private property to connect homes and businesses to the underground lines.

Notification Process

Notifications occur throughout the project, but particularly around the time that design is being finalized and they are getting ready to start construction.

Property owners are invited to a community forum once the design is complete. The community forum is another opportunity for property owners and community members to give input on placement of utility boxes, placement of streetlights, and other areas where design flexibility remains. At the close of the forum, the design teams will need to finalize the design so that construction can proceed in an efficient and cost effective manner. The community forum will also include a presentation of what to expect in upcoming months, and an opportunity for community members to ask questions.

Construction crews will follow standard practices for notifying the public about upcoming construction that impacts streets and sidewalks including a door hanger approximately three weeks prior to start of construction.

Prior to start of construction property owners will receive a letter to request permission to enter private property in order to perform construction necessary for connection to the new underground utility service. Enclosed with the letter is a Permit to Enter, which needs to be signed by the property owner. This is one of the most important actions that property owners will be requested to take in order for the undergrounding project to be successful. If the form is turned in on time and the properties existing electrical panel is up to code, then the property owner will be connected to the new system at no cost.

Construction Process

Construction of underground utility systems and the subsequent removal of overhead utility systems consists of four phases: trenching or tunneling, cabling, cut-overs and pole removal, described in more detail below.

Phase I: Trenching or Tunneling

Prior to trenching, existing underground utilities such as water, sewer, and gas, are located and marked along the proposed alignment. Exploratory excavations (potholing) are typically used to verify the locations of existing facilities in the field. Right of way, traffic control, and storm water permits are secured for trenching in City streets, as required. Projects do not usually result in any road closures, although some roads may be limited to one-way traffic at times.

Staging areas for storage of equipment and materials area also a part of construction. Where feasible, existing developed or disturbed areas (e.g., street rights-of-way or parking lots) are used for staging.

Trenching of the main line in the street right of way is conducted using open-cut trenching techniques along one side of the roadway and typically excavating with a back hoe approximately five feet deep and three feet wide to accommodate the installation of PVC

conduit in the trench. Depth may vary depending on soil stability and the presence of existing substructures or other infrastructure. Trenches are widened and shored where necessary to meet California Occupational Safety and Health Administration safety requirements. Tunneling may be used in cases where it is not feasible to trench in the road and/or to avoid existing infrastructure (e.g., trolley track crossings). Jackhammers may be used sparingly to break up sections of concrete that the saw-cutting equipment cannot reach.

Additional excavation is required to install prefabricated concrete vaults and “handholes”. During construction these structures allow the pulling of cable through the conduits and splicing of newly laid cables. After construction these structures will remain in place to provide operational access to the underground cables for maintenance, inspections, and repairs.

Trenching operations are staged in intervals of typically 300 to 500 feet to minimize disturbance on each street at any one time. Steel plating is placed over the trenches to maintain vehicular and pedestrian traffic across areas that are not under active construction. Traffic controls are implemented to direct local traffic safely around work areas with provisions for emergency vehicle and local access as necessary.

Individual homes and businesses are connected to the main line in the right of way by boring laterally through private property to the location where the electrical service box is located on each building. If boring is not feasible, open trenches approximately three feet deep and two feet wide will be dug using a small excavator or by hand if necessary. Jackhammers may also be used as needed. The City must obtain a Permit to Enter from the property owner in order to perform this work.

Throughout trench excavation, excavated materials are tested and used as backfill if the material is suitable. If trench water is encountered, trenches are dewatered using a portable pump and disposed of in accordance with permits and regulations. If unexpected soils and/or groundwater contamination are encountered during trenching activities, soils and/or groundwater would be tested, handled and disposed of in accordance with applicable regulations. Soil disturbing activities are monitored in areas that have the potential to encounter buried Native American, archaeological, or paleontological resources.

After conduit is installed, engineered backfill or excavated soil is placed and compacted. A road base backfill or slurry concrete cap is installed and the disturbed road surface is restored in compliance with City standards. While the completed trench sections are being restored, additional trench line is opened further down the street. Conduit typically would have 36 inches of cover, but depth of cover will be based on latest engineering standards.



Figure 2: Example of Trenching

Phase II: Cabling

After installation of the conduit, cable is pulled through each segment, spliced at each of the vaults along the route, and may terminate at a substation rack and pole. To pull the cable through, a conductor reel is placed at one end of the section and a pulling rig is placed at the other end. A rope is then pulled into the duct using a fish line and is attached to the cable to pull it into the duct. A lubricant is applied to the cable as it enters the duct to decrease friction during pulling. A splice trailer and mobile power generator are positioned adjacent to the vault manhole openings to facilitate splicing at the vaults after the cables are pulled through the conduit.

During this phase, new transformers, cable boxes and pedestals being installed above ground near the curbs. These boxes are necessary for the underground system and cannot be placed underground for system reliability reasons.



Figure 3: Transformer (left) and cable box (right)

Phase III: Cut-Overs

Once a new underground system is in place and energized, and all properties have been prepared to receive underground service, all properties are switched over from the overhead lines to the new underground systems.



Figure 4: Pole Removal Process

Phase IV: Pole Removal

When 100% of properties have been switched over to the new underground system, the overhead systems are de-energized and removed. Pole removal begins with crews dismantling the hardware on the existing poles using cranes and aerial man-lifts. The old poles would then be cut off at ground level and transported off site by flatbed truck for disposal at an approved facility. The base of the pole would be abandoned in place if it cannot be removed. If the base of the pole is removed, then the void would be backfilled and compacted. Poles in areas without access roads or in sensitive habitat are removed by crews who cut the poles into sections and haul it out on foot.

Sometimes new utility poles may need to be installed at the project boundary to make the transition from the new underground system to a neighboring overhead system. These poles will be removed when the neighboring area is undergrounded in the future.

Post Construction: Street Lights and Trees

Once the new underground utility lines are in place the City will construct the following types of public improvements:

Curb Ramps

New pedestrian curb ramps are installed where required for compliance with the Americans with Disabilities Act. Street Lights

The old street lights that are attached to wooden poles are replaced with stand-alone fixtures in accordance with the City's current street light standards. In many cases residents will notice that the lighting locations have moved from their old locations and that additional lighting has been added. Since new lights cannot be placed until old poles are removed, there may be a short period without any street lighting.

Trees

Reasonable steps are taken to protect trees while work is in progress, but occasionally a tree must be removed for safety reasons. To reduce the impact associated with tree removal on these projects, new street trees are planted when the City is able to get a property owner to agree to water and care for the tree until it becomes established. More information about this opportunity is provided to property owners through the mail prior to construction.

Paving

At the end of the project, pavement damaged by the construction work is repaired and asphalt streets receive a slurry seal or resurfacing treatment. Any concrete surfaces such as street panels or cross gutters that are impacted by construction will be repaired or replaced.

How the Master Plan is Used

Council Policy 600-08 requires that the City establish and maintain a master plan to guide the allocation of both Rule 20A and Surcharge projects for the duration of the program. Within the Utilities Undergrounding Program Master Plan (Master Plan) the geographic boundary, estimated cost, and other parameters are established for future projects covering all areas in the City where undergrounding is needed. This Master Plan is the governing document for how the Utilities Undergrounding Program (UUP) will execute its future work.

[Previous Master Plan History](#)

In 2003, the City developed a Master Plan, which was the first comprehensive plan to underground all overhead utilities within the City. It coordinated the construction and project sequence for the entire Undergrounding program. Projects were divided by Council Districts, which were broken into smaller projects. Each project was assigned a ranking for when they would be undergrounded and a cost estimate.

In 2009, a new Master Plan was created using Geographic Information System (GIS) software that allowed for more detailed analysis of projects, and providing similar details to the 2003 Master Plan.

[Latest Updates to the Master Plan](#)

An update to the 2009 Master Plan was required. The 2009 Master Plan cost and schedule estimates were becoming incorrect, so these needed to be updated, and a new methodology for communicating realistic time and schedule information to the public needed to be devised. This new Master Plan takes all currently unallocated projects from the 2009 Master Plan and divides them up into new projects. Project areas target SDG&E's remaining overhead utilities.

In order to provide the framework for a new Master Plan, a report entitled *UUP Master Plan Update – Factors and Method Report* was developed by Lee & Ro for the UUP. This report used the 2009 Master Plan to create this framework. This report highlighted key decisions and policies that helped shape this Master Plan.

In order to communicate this new Master Plan framework to the public, a public and stakeholder outreach process was developed. As part of this process, a set of community outreach meetings were organized at five different locations in the City in early 2017. These meetings served as forums to share the report with the constituents, and to get feedback from them. Feedback was collected in the form of direct questions and through comment cards. Also outside of these direct meetings, public engagement was encouraged, which resulted in emails to the Program, and comments left directly on the website. Public comments from all sources were consolidated into a comment matrix and reviewed.

In addition to reaching out to the public directly, the UUP team collaborated regularly with the Council offices on the Master Plan development. The Council offices were able to provide helpful feedback about their constituents' needs and concerns.

The UUP team and Lee & Ro used this feedback from the public and council offices to aid in the development of this Draft Master Plan and the Five Year Implementation Plan. The UUP Team will present these documents to the public and the Council Offices for a final round of feedback in late 2017. Additional community meetings will be held in order to get more public

feedback. Following the completion of the Public Review period, the community feedback will be incorporated into the finalized Master Plan.

II. Underlying Considerations

Scope and Limitations

This Master Plan focuses on undergrounding power distribution lines, telephone lines, cable lines, and other communications lines. It does not include transmission lines, areas outside the City Limits, or areas that have already been undergrounded. Transmission line undergrounding feasibility is discussed at length in the Master Plan Implementation Strategy section of this report. Open space areas will be identified and included, but will be given a low priority unless they are necessary for electrical continuity.

Please note that 20A projects will remain the same size as they were in the 2009 Master Plan, though their cost estimates have been adjusted. Cost details, for both 20A and Surcharge projects, can be found in the *UUP Master Plan Report: Technical Supplement*.

This Master Plan will not provide specific project implementation order. The implementation order for the next five years will be provided in a separate document, called the *Five Year Implementation Plan*.

In general, undergrounding projects are allocated based on the rate the UUP budget is being spent. This plan does not include expected project implementation rates, because these rates can vary based on how much revenue is available to be spent. Further details on budgetary considerations are discussed in the Master Plan Implementation Strategy section of this report.

Goals

This Master Plan goals are discussed below.

[Align with Council Policy 600-08 for the Utilities Undergrounding Program](#)

In accordance with Council Policy 600-08, all overhead utility lines within the public right-of-way in the City will be undergrounded in the interest of public health, safety and welfare. The Policy requires the UUP to have a Master Plan reflecting all Projects that need to be undergrounded in the City.

[Improve Planning Efficiency and Accuracy](#)

There were a number of ways in which this new Master Plan improves planning efficiency. The Master Plan used SDG&E utility information as a tool for development. SDG&E's Geographic Information System (GIS) information shows existing overhead utilities, and thus remaining work. Using this GIS system allowed this master plan to account for electrical engineering considerations.

Additionally, project sizes were made smaller so that they would be more manageable. The ideal size is 200 ± 25 electrical services per project and approximately 6,000 feet of joint trench.

The tools used to estimate project cost for this Master Plan incorporated more technical details than previous Master Plans did. These details can be found in the *UUP Master Plan Report: Technical Supplement*.

Another efficiency improvement with this new Master Plan is that new projects do not include already undergrounded areas, which both alleviates confusion for residents, and simplifies planning and coordination with other City projects.

Prioritize Projects with Greatest Public Benefit

This Master Plan will distribute undergrounding projects equitably throughout the City, while focusing on prioritizing projects that have the greatest public benefits. Greatest public benefit is determined by such criteria as land use, view corridors, areas with high overhead concentration, community plan consultation, and proximity to public facilities like trolley stations, parks, schools, and major streets. More details about this prioritization is provided in the Master Plan Implementation Strategy section of this report.

Reduce Neighborhood Impact

Another goal of this Master Plan is to reduce the impact that any undergrounding project will have on any one neighborhood. One way of achieving this in prioritizing projects will be to coordinate with other planned projects in the area to minimize neighborhood disruption, using coordination tools in GIS and the City's conflict check coordination tool. This planning will help ensure compliance with the City's "one dig" policy.

Simplify Public Interface with the UUP

So that the public can understand these undergrounding projects better, the project naming convention has changed to the actual neighborhood names, rather than numbers and letters that were used in previous Master Plans. Projects that were allocated under previous Master Plans retain the old naming convention and boundaries.

Another simplification for this Master Plan is using a *Five Year Implementation Plan* to communicate the anticipated project allocation to the public, rather than having expected dates of project allocation for the length of the entire Program. This will allow the program more flexibility for more or less allocation based on Program funding and construction timing, and will not give residents unrealistic projections about the future. For more discussion of this implementation strategy, refer to the Master Plan Implementation Strategy Section.

Inventory Analysis

Lee & Ro performed inventory analysis in order to determine how many power poles remained in the City. They used SDG&E utility information to develop the updated Master Plan. SDG&E's information was verified through land use verification, satellite imagery, and street view imagery. It was determined that SDG&E's GIS layer was accurate, and was used with confidence to generate this new Master Plan.

Based on SDG&E's information, a base datum was established in May 2016 to represent undergrounding progress at that time. This map can be seen in Figure 5 below.

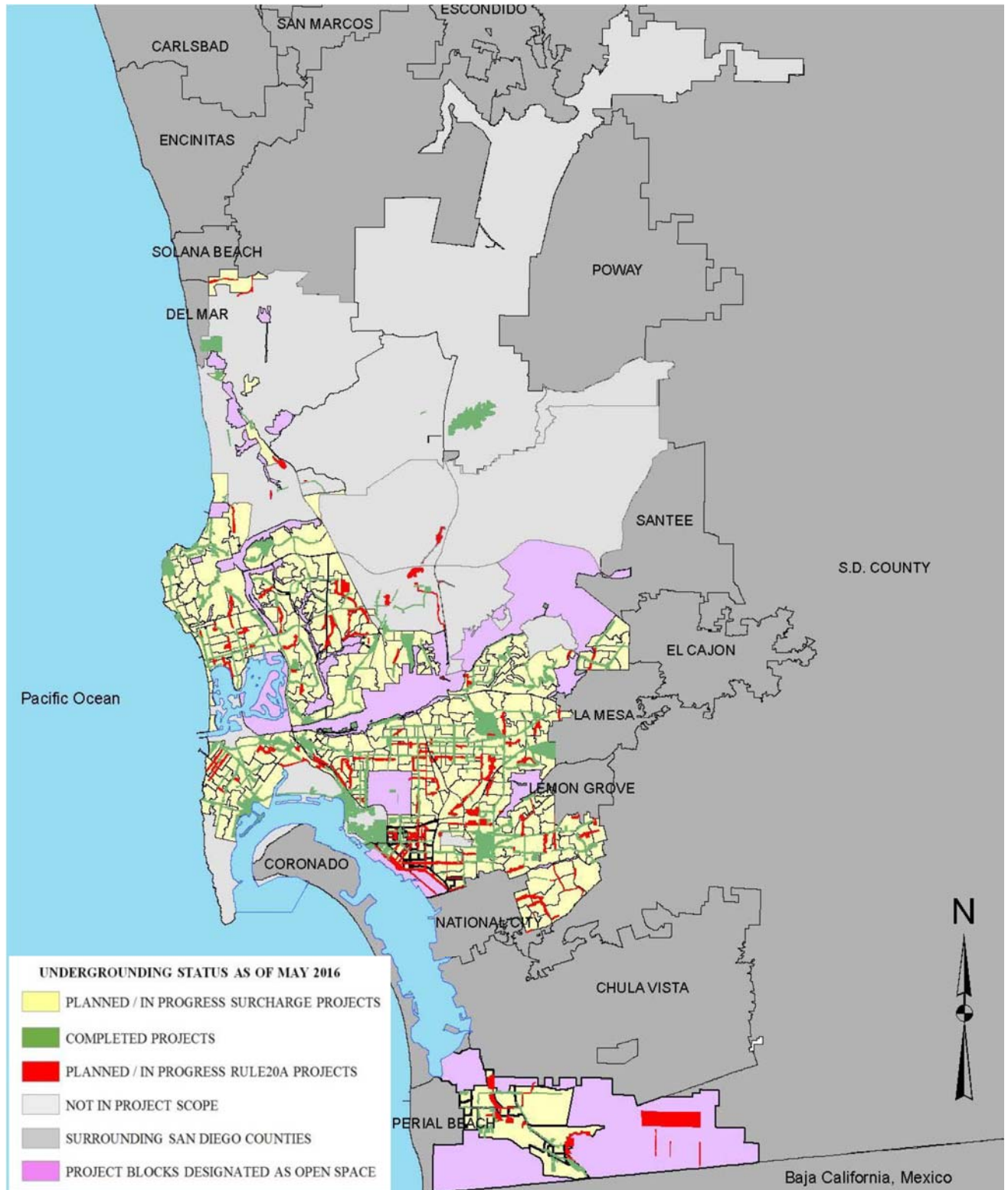


Figure 5: Project Conditions Map in May 2016

III. Planned Project Inventory

This Master Plan refers to other documents and databases that are needed to manage the Program. Below are listed the various items that were used and will continue to be used by the UUP for long-term planning, outside of this Master Plan itself.

Master Plan Maps

All maps for both Rule 20A and Surcharge projects, including project data, are included in Appendix A of this Master Plan. Maps show the project boundary, estimated project cost at the time of this document being approved by Council, parcels and any major roads in the boundary. Adjacent Rule 20A Projects and adjacent active Surcharge projects are highlighted in the map for context. Maps cover all areas of the City where undergrounding is needed.

GIS database for Master Plan

A GIS database was created to help make this Master Plan, which includes project boundaries and each project's associated attribute fields. Project attribute fields allow for efficient analyses, modification, and potential future updates to the plan. Specifically, these fields include information necessary to derive projected costs and priority scores, which help determine the sequence of project allocations five years in advance. Examples of attribute fields used to make these determinations include the number of intersections, service drops, overhead poles, backlot poles, alley poles, transformers, meters, substations, and the overall project length. These factors were all taken into account to both draw new project boundaries and to create a priority score for these new projects.

UUP Master Plan Report: Technical Supplement

The technical supplement provides detailed project information and cost breakdown for all Rule 20A and Surcharge projects. Project information consists of many of the fields available in the GIS database, including estimated trench length, number of poles in the project area, number of transformers and other important information that is critical to estimating the total project cost. Cost breakdown includes detailed estimated expenditures for all project phases.

How to Navigate the Maps Inventory Section

Navigation through the Master Plan maps in Appendix A is described in the paragraphs below.

Keyed Maps

The **Council Districts Keyed Map**, outlines the City's boundaries and its Council Districts. Here, residents can find their Council District and turn to the appropriate **Neighborhood Keyed Map**.

The **Neighborhood Keyed Map**, illustrates the neighborhoods in each Council District. Here, residents can find their neighborhood and turn to the appropriate **Projects Keyed Map**.

The **Projects Keyed Map** outlines all the UUP's undergrounding conversion projects. Here, residents can find their house and turn to the appropriate **Project Map**.

Master Plan Symbology

For the **Project Keyed Maps**, the legend symbol **UUP Projects** identifies the boundaries of all Surcharge projects to be completed, in yellow.

There are also overhead lines that do not directly service homes or serve very few homes, but still qualify for undergrounding under the Surcharge Program, which are called **Segment Projects**. These projects include utilities that remain overhead in areas already undergrounded, or utilities that serve as connections across open spaces, canyons, or freeways, or that provide electrical continuity between neighborhoods.

Projects In Progress are projects from the previous Master Plan that have already been approved at the time this Master Plan is adopted. These will continue as scheduled. The **Surcharge Projects In Progress** are denoted in brown, and the **20A Projects In Progress** are denoted in red, with the Project's 2009 Master Plan name shown in black font. The **Block ID name** is used for Surcharge projects and the **CIP ID name** is used for Rule 20A projects. For information regarding 20A projects, refer to the 2009 Master Plan, as their project boundaries have not been changed. **Major Streets** are denoted with green lines.

IV. Master Plan Implementation Strategy

The UUP has developed a *Five Year Implementation Plan* as a companion document to the Master Plan. The plan will list the projects that will be allocated in the next five years in a Project Allocation List. It will use the goals, objectives and strategies contained in this Master Plan. The *Five Year Implementation Plan* will be revisited yearly to allocate another year of projects, evaluate progress, and analyze fund balance and revenue.

This plan will let the UUP be proactive and flexible with projects. The UUP will be able to coordinate with other major City projects and adjust schedules based on moratoriums and conflicts, all while achieving the projected mileage goals.

Process for Identifying Project Sequence

The most efficient practice for phasing utility undergrounding work over multiple years is to start on one end of the City and then proceed in sequence toward the other end of the City. This desire for efficiency must be balanced against other interests, including fairly distributing the benefit across all neighborhoods, prioritizing work where the public benefit is the greatest, and coordinating with other projects. The approach used for determining project sequencing five years in advance balances these interests. Interests of fair distribution and project coordination are prioritized by first establishing clusters of planned projects which share contiguous boundaries. Efficiency interests are prioritized by using logical sequencing within every cluster.

Within each cluster of projects, an algorithm is used to generate a priority value based on a weighted average of the following considerations:

1. Land Use of the Project Area
 - a. From highest to lowest priority: residential, public facilities, tourism areas, commercial areas, heavy traffic, or open space
2. Substation in the Project Area (this will create a high priority)
3. Other Public Benefit

- a. Projects adjacent to active or completed projects
- b. Opportunities for project coordination
- c. Recommendations in Community Plans
- d. Communication with Council Office and public input

If a project has already been initiated within a project cluster, the priority algorithm will help determine which project in this cluster should be next in the sequence. This process repeats for the next project in sequence until all projects within the cluster are allocated. If the cluster does not have a clear starting point, or “seed project”, then the priority algorithm and other considerations will be used to determine the first project of the sequence within the cluster. Further detail on the exact implementation reasons will be provided in the *Five Year Implementation Plan*.

Goals of Five Year Implementation Strategy

Project Planning

The implementation plan will improve overall UUP project planning. It will allow the UUP to focus on a limited pool of projects, effectively manage timelines, develop achievable goals, and efficiently track progress.

Effective Communication

The Five Year Implementation Plan will focus on a limited number of Projects, thus making it manageable to effectively communicate with Utility Companies, Council Offices and residents.

Financial Considerations

When looking at financial considerations for the UUP, Surcharge projects and 20A projects need to be examined separately, as the Surcharge fund is managed by the City, and the 20A fund is managed by SDG&E.

Surcharge revenue is collected from City SDG&E customers and remitted to the City quarterly. This revenue received has increased since the start of the program, with yearly program expenditures tracking with this. The target for the UUP fund balance is 35% of the yearly revenue, and projects will be allocated in the *Five Year Implementation Plan* at a rate that will maintain this fund balance. Additionally, the *Five Year Implementation Plan* will give details on up-to-date fund balance information.

Revenue for Rule 20A undergrounding projects is collected and managed by SDG&E. SDG&E uses this revenue to design and construct Rule 20A-eligible projects after they have been approved by the City Council. Currently, at the time of this report, SDG&E expends approximately \$10 million per year on Rule 20A projects, which may vary in the future per CPUC direction.

Undergrounding of Transmission Lines

What is an electrical transmission line?

The California Public Utilities Commission (CPUC) defines electrical transmission lines at 50 kilovolts (kV) or higher and distribution lines below 50 kV. Transmission lines vary in size and system function. The transmission lines on tower structures are cost prohibitive for this program to convert to underground. More localized transmission lines, typically 69 kV lines,

are feasible. These may be mounted on wood or steel poles, and do not look very different from distribution lines. These often have distribution lines underneath them sharing the same poles (termed “distribution underbuild”). The transmission lines, when undergrounded, will be placed in a different trench than underground distribution lines, and therefore the undergrounding projects may be built separately. In the case of a distribution underbuild, if the transmission undergrounding occurs first, the poles may be “topped,” leaving the lower portion of the poles to support the distribution lines until these are undergrounded. If the distribution undergrounding occurs first, then distribution lines, crossbars, transformers, communications lines, and other attachment will be removed from the poles, leaving a cleaner looking pole until the transmission lines are removed.



Figure 6: Transmission Line Example, Harbor Drive in the Logan Heights Area

Transmission Lines in the Master Plan

One reason for the absence of specific information related to electrical transmission lines in the previous master plans is an assumption that such decisions can be made at the time of allocating a distribution undergrounding project. However, this is often not practical, because the practical project limits for undergrounding of transmission lines often extend beyond the distribution undergrounding district boundary. Starting and ending a transmission line project at these boundaries usually results in high expenses for installing a specially-designed utility boundary pole at each end of the project (as shown in Figure 7). Such boundary poles are larger than regular transmission line poles, which is undesirable for the community and directly impacts the value of private property at these pole locations.



Figure 7: Typical Boundary Pole

Projects to underground electrical transmission projects are best developed and evaluated individually in coordination with SDG&E. Typically, the alignment will traverse more than one distribution undergrounding district in order to minimize the use of boundary poles. The following are guidelines for assessing the feasibility of individual transmission line projects.

1. Transmission line projects may be feasible if they can be funded by the 10% annual allocation allowed at the discretion of the Mayor, as defined in CP 600-08. This limits the impact this will have on the schedules of distribution undergrounding projects.
2. Undergrounding of transmission lines greater than 69 kV is generally expected to be cost prohibitive.
3. These transmission projects are subject to the same public benefit consideration as distribution projects. For example, if the project removes overhead lines from a view corridor, it may be viewed as more feasible than a project at the same cost that does not have any unique public benefits.
4. Feasibility generally increases when there is an opportunity for cost sharing with SDG&E. This occurs when SDG&E has other planned investments related to upgrading or maintaining the transmission lines, which can be done at the same time as undergrounding the lines.
5. Feasibility may consider other specific agreements with SDG&E. Commonly, SDG&E will request a "joint use agreement" which reduces the costs for SDG&E should future relocation be required to accommodate a City project, shifting some of that cost burden to the City. The project may be considered infeasible if entering a joint use agreement presents an unacceptable risk to the City.
6. Cost-benefit information for a proposed transmission undergrounding will be made available to the public prior to a Council action to allocate the project.

V. Maintenance of the Master Plan

Future substantial changes to the Master Plan will need to be approved by Council. Non-substantial changes, such as minor project boundary adjustments or inflation adjustments, will be approved by the Utilities Undergrounding Program Director.

The *UUP Master Plan Report: Technical Supplement* and associated GIS layers will be updated at a working level by the UUP team at the discretion of the Utilities Underground Program Manager.

Appendix A

MASTER PLAN MAPPING



I. MASTER PLAN MAPS

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