ANNUAL REPORTS -- UNDERGROUND WIRING 1976-1978

1976

Unrecorded Subject File

CENTRAL FILE

Annual Rpro - U'Gnd Wiring

CITY ENGINEER

Seattle
Board of Public Works

Betty L. McFarlane, Executive Secretary
Charles Royer, Mayor

Re: 1977 Underground Wiring Report

August 23, 1978

ROUTING	DATE	INITIAL
ACTION		
FILE	✓	
INFORMATION		
PAW		
EHW/KTJ		

VIA: Mayor Charles Royer, Attention: O.M.B.

City Council
City of Seattle

Honorable Members:

In compliance with Section VIII of City Council Resolution No. 21340, the Board of Public Works herewith submits the 1977 Seattle Underground Wiring Report for the period ended December 31, 1977.

Additional copies are available from this office upon request.

Respectfully submitted,

BOARD OF PUBLIC WORKS

Betty L. McFarlane

Betty L. McFarlane
Executive Secretary

BLM:wb

cc: Superintendent of Lighting
O.M.B.
Mayor Charles Royer

SEATTLE ENG DEPT
AUG 29 10 22 AM '78

Annual Rpts - U'Grnd Wiring

OFFICE OF THE MAYOR—CITY OF SEATTLE

Wes Uhlman, Mayor

August 6, 1976

The City Council
The City of Seattle

Honorable Members:

The attached letter from Board of Public Works,
Re: 1975 Underground Wiring Report
has been reviewed by the Office of Management and Budget. We concur with the recommendation contained therein and recommend that the same be adopted.

Sincerely,

Wes Uhlman
Mayor

by

Walter R. Hundley
Budget Director

ROUTING	DATE	INITIAL
ACTION		
FILE	✓	
INFORMATION		
att WEPS	EHU	KTJ

WRH: KS:mr
Attachments

cc: Mayor's Office

SEATTLE ENG DEPT
AUG 19 8 52 AM '76

PAUL A. WIATRAK, CITY ENGINEER

Seattle
Board of Public Works

Betty L. McFarlane, Executive Secretary
Wes Uhlman, Mayor

Re: 1975 Seattle Underground Wiring Report

Via: Mayor Wes Uhlman

August 4, 1976

RECEIVED
AUG 4 1976
OFFICE OF MANAGEMENT
& BUDGET

City Council
City of Seattle

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Att.

cc: Supt. of Lighting
City Engineer
OMB

ANNUAL REPORTS - UNDERGROUND WIRING #1

1969 - 1974

L. I. D.

ANNUAL REPORTS - Underground Wiring

NATURE

1968-

CENTRAL FILE

SEATTLE UNDERGROUND WIRING

REPORT FOR PERIOD ENDED MARCH 31, 1973

ISSUED BY THE BOARD OF PUBLIC WORKS OF THE CITY OF SEATTLE IN COMPLIANCE WITH CITY COUNCIL RESOLUTION 21340

CITY OF SEATTLE

March 31, 1973

ELECTED OFFICIALS

Wes Uhlman	Mayor
Carl G. Erlandson	City Comptroller and City Clerk
P. F. Eldred	City Treasurer
Alfred L. Newbould	Corporation Counsel
Liem Eng Tuai	President, City Council
Bruce K. Chapman	Council Member
George E. Cooley	Council Member
Tim Hill	Council Member
Phyllis Lamphere	Council Member
Wayne D. Larkin	Council Member
John R. Miller	Council Member
Sam Smith	Council Member
Jeanette Williams	Council Member

BOARD OF PUBLIC WORKS

Alfred Petty
Superintendent of Buildings
Chairman

Robert J. Gulino
City Engineer
Vice-Chairman

Gordon Vickery
Superintendent of Lighting

Hans A. Thompson
Superintendent of Parks and Recreation

Kenneth M. Lowthian
Superintendent of Water

Betty L. McFarlane
Secretary

UNDERGROUND WIRING REPORT

FOR PERIOD ENDED MARCH 31, 1973

Issued by the Board of Public Works of the City of Seattle in compliance with Article VIII of City Council Resolution 21340, adopted January 29, 1968

SEATTLE'S WIRE UNDERGROUNDING

The principal thrust of Seattle's effort to get utility and communications lines out of sight is directed toward replacing existing aerial construction with underground installations. On the following pages, conversions from existing overhead to new underground wiring are reported as area projects (residential neighborhood conversions and commercial district conversions) and as arterial street improvements.

Next to conversions in importance for the Seattle wire-undergrounding program is the substitution of underground for overhead facilities in conjunction with new construction. City departments have been installing high-voltage transmission lines, traffic-control circuits, street light circuits and communication lines of their own systems underground where it is feasible to do so. Utilities have extended their services to consumers' newly constructed facilities through underground connections from existing overhead systems that supply many districts, when either a sizable additional load or a sizable geographic area required utility services.

Increasing utility service requirements of areas that already are supplied through underground installations account for the third important class of undergrounding activity maintained in Seattle, principally by the municipal electric utility — Seattle City Light — and by the Pacific Northwest Bell Telephone Company. Capacity additions and reliability improvement for existing underground utility systems do not immediately eliminate utility poles and wires from view, but they represent substantial and necessary investments for the concerned utilities, and they may contribute to earlier enlargement of areas already undergrounded.

Wire-undergrounding projects discussed in this report are all situated within the 131-square-mile service territory of Seattle City Light. As mapped on pages 4 and 5, this territory includes unincorporated Seattle suburbs between the city's north limit and the Snohomish County line and between the south city limit and an irregular line which brings such South End communities as Burien, Riverton Heights and Tukwila into Seattle City Light's service area.

Within incorporated Seattle, the City of Seattle Engineering Department has been the chief participant in underground conversion projects with City Light, Pacific Northwest Bell and the various community antenna television (CATV) companies. Arterial conversions outside corporate Seattle have involved the King County Department of Public Works in place of the Seattle Engineering Department.*

RESIDENTIAL NEIGHBORHOOD CONVERSIONS

A desire to eliminate aspects of "visual pollution" associated with overhead wires and utility poles — rather than a desire to improve utility services as such — has motivated the efforts of residents of many Seattle residential neighborhoods to achieve conversion to underground utilities. Consequently, the climactic event in the lengthy, expensive process of organizing and completing a neighborhood undergrounding project is the physical removal of the offending wires and poles.

Although the ultimate removals consume but a small fraction of the time and effort invested in planning and constructing underground systems, connecting individual premises to the new systems, and completing surface restorations, the effect of this last step is undeniably dramatic. It quickly transforms the appearance of an entire neighborhood and reveals to residents the uncluttered marine and mountain vistas they had hoped to see.

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*Readers interested in the legislative and historical background of Seattle's wire undergrounding activities are referred to the Board of Public Works' Underground Wiring Reports for 1969, 1970 and 1971, obtainable from the Board.

UNDERGROUND WIRING REPORT

FOR PERIOD ENDED MARCH 31, 1973

Issued by the Board of Public Works of the City of Seattle in compliance with Article VIII of City Council Resolution 21340, adopted January 29, 1968

Gordon Vickery
Superintendent of Lighting

Kenneth M. Lowthian
Superintendent of Water

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Clerk

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Fifteen Seattle residential neighborhoods totaling 4,202 homesites have now experienced the dramatic transformation that occurs when overhead wires and utility poles disappear. Thirteen neighborhoods, totaling another 3,000 homesites, are in the process of planning or constructing conversion projects, most of which will be completed in 1973 and 1974. The fifteen neighborhoods which have completed one or more underground conversion projects, utilizing various methods of sponsorship, are:

Neighborhood and Project Area Boundaries	Lots In Project Area(s)	Area In Square Blocks	Poles Eliminated	Project Sponsorship
ARROYO BEACH: S.W. 107th Street; 39th Avenue S.W.; Arroyo Drive S.W.; 44th Avenue S.W.	150	10	79	LID
ENDOLYNE: S.W. Brace Point Drive; 46th Avenue S.W.; S.W. 104th Street; Puget Sound	135	12	88	LID
GATEWOOD HILL: S.W. Warsaw Street; 38th Avenue S.W.; S.W. Myrtle and Frontenac Streets; 41st Avenue S.W.	155	8	61	LID
HILLCREST: S.W. Spokane Street; 55th Avenue S.W.; S.W. Bradford Street; Hillcrest Avenue S.W.	103	6	46	LID
MAGNOLIA: Magnolia Boulevard W.; 44th Avenue W.; W. Barrett Street; 39th Avenue W.; Altavista Place W.; Eastmont Way W.	687	20	291	LID[1]
NORTH BEACH: 21st Avenue N.W.; N.W. 95th Street; 24th Avenue N.W.; N.W. 100th Street	185	10	64	LID
BLUE RIDGE: 12th Avenue N.W.; N.W. 105th Street; 15th Avenue N.W.; N. W. 99th & 100th Streets; N.W. Neptune Place; N.W. Blue Ridge Drive; N.W. Woodbine Way; N.W. Norcross Way	523	20	189	LID
SHERIDAN BEACH-SHERIDAN HEIGHTS: N.E. 160th Street; 38th & 36th Avenues N.E.; N.E. 170th Street; Lake Washington	217	15	100	RID
NORTHEAST 88th STREET: N.E. 88th Street between 42nd & 45th Avenues N.E.	16	2	6	LID
VIEW RIDGE: 50th Avenue N.E.; N.E. 75th Street; 52nd Avenue N.E.; N.E. 65th Street; and 56th Avenue N.E.; N.E. 75th Street; 58th Avenue N.E.; N.E. 70th Street	417	18	140	LID
NORTHEAST 42nd STREET: N.E. 42nd Street between 48th & 50th Avenues N.E.	32	2	5	LID
LAURELHURST: N.E. Surber Drive; N.E. 41st Street; 42nd Avenue N.E.; N.E. 45th Street; 50th Avenue N.E.; N.E. 47th Street; Lake Washington	1,108	65	432	'voluntary'[2]
HAWTHORNE HILLS: Princeton Avenue N.E.; N.E. 65th Street; 52nd Avenue N.E.; N.E. Pullman Avenue; N.E. 55th Street	214	15	85	LID
NORTH WINDERMERE: N.E. 60th Street between 57th and 65th Avenues N.E.; N.E. 61st Street east of 65th Avenue N.E.	63	5	26	corporation[3]
DENNY-BLAINE: E. Howell Street; Madrona Drive; Madrona Place E.; 37th Avenue E.; Lake Washington Boulevard E.; E. Denny-Blaine Place; Lake Washington	99	9	78	LID

[1] Conversion of 44th Avenue W. between W. Dravus and W. Barrett Streets (Kathleen Owens development) sponsored by individual subscriptions; remaining completed Magnolia conversions sponsored by six LIDs.

[2] Conversion of N.E. 42nd Street between 48th and 50th Avenues N.E. sponsored by LID; East and West Laurelhurst projects completed under contracts between individual property owners and Seattle City Light.

[3] Corporation of affected property owners sponsored conversion on N.E. 60th Street; individual property owners contracted with Seattle City Light for conversion on N.E. 61st Street (Edge-O-Towne).

Street in Seattle's Laurelhurst district before conversion to underground utilities.

The thirteen residential neighborhoods which were the locales of active underground conversion projects in early 1973 include:

SAND POINT GOLF AND COUNTRY CLUB, where LID-financed underground installations that will serve about 200 homes along N.E. Crown Place and the intersecting streets were 95 per cent completed by January 1.

DENNY-BLAINE, where a second LID-sponsored conversion affecting 60 homesites immediately south of the first is under construction.

WASHINGTON PARK, where the McGilvra Boulevard E. LID is sponsoring a conversion project affecting 325 homesites in an area which extends north from the first Denny-Blaine project to E. Lee Street and from Lake Washington west to 36th Avenue E., with engineering half completed by January 1.

NORTHWEST LESCHI, an area bounded by 29th Avenue, E. Cherry Street, 32nd Avenue and E. Yesler Way where the installation of underground services to all 330 residences by Seattle City Light and Pacific Northwest Bell was nearing completion early in 1973. The federal department of housing and urban development (HUD) had funded the 1971-1972 contract covering installation of electrical distribution facilities in the area's streets for this conversion, which is part of a HUD neighborhood development project. In 1973, the conversion project is being extended westward to Empire Way.

WEST SEATTLE residents have initiated two new neighborhood LID conversion projects, each limited to a single street: Halleck Avenue S.W., where the 12 homes in the project area look out over Alki Beach toward Puget Sound and the Olympic Mountains; and Prescott Avenue S. W., where eight homes in the project area view Seattle from across Elliott Bay.

SHOREWOOD, near Puget Sound beyond Seattle's south city limit, has organized a King County road improvement district (RID) to sponsor conversion of an area containing 104 homesites to underground utilities.

INNIS ARDEN, also near Puget Sound but beyond Seattle's north limit, has an RID-sponsored underground conversion project embracing 550 homesites in the engineering design stage. Contract construction is expected to begin late in 1973.

AVIATION HEIGHTS, overlooking Sand Point Naval Air Station and Lake Washington, expected to complete construction of its 65-homesite, LID-sponsored underground conversion project during the summer of 1973.

VIEW RIDGE completed construction of underground facilities early in 1973 that will serve 75 homes in the area's third LID conversion area, while engineering was more than half completed for LID undergrounding of a fourth View Ridge area containing 200 homesites.

SOUTHWEST WINDERMERE has two LID underground conversion projects in the pre-contract engineering stage: one involving 80 homesites on Ivanhoe Place N.E.; the other involving 60 homesites on N.E. 52nd Street.

QUEEN ANNE HILL also has two LID underground conversion projects in advanced stages of engineering design: the 120-homesite Ninth Avenue W. project and the 200-homesite W. Lee Street project, both of which involve streets in addition to those named.

MAGNOLIA will see construction of three more LID underground conversion projects, including 432 homesites, completed during 1973. Engineering of another Magnolia LID project, with 21 homesites, is in progress; and advance planning of a future Magnolia LID project involving 114 homesites began in early 1973.

The same Laurelhu
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Washingt

Improvement districts have proved themselves, in the Seattle area, to be the most equitable means of allocating the high costs of residential neighborhood underground conversion work among those most directly benefited, and the surest way of obtaining participation in a project by all prospectively affected properties without violating the principle of majority rule. In many instances, project boundaries have been modified and assessments of those marginally affected by projects have been adjusted in the interests of fairness and to avoid imposing hardships on anyone.

LID assessments "per buildable lot" within each project have been uniform, but the cost experience of Seattle City Light and the telephone company forced assessment levels up in 1969 and again in 1971. LID assessments are expected to cover up to 60 per cent of the cost of conversion work in public streets. All ratepayers subsidize these projects thru utility payment of the remaining costs of this work (variable from one project to another), while individual property owners are responsible for conversion work on their own premises.

Allocation of the costs of residential neighborhood conversions between benefited properties and utility ratepayers has been in accordance with Article VI of Resolution 21340. It should be noted that no neighborhood LID project combining wire undergrounding with street paving (as envisioned by Article IV of the resolution) has been inaugurated in Seattle, so far. All residential neighborhood conversion projects have, however, included new street lighting supplied from underground circuits as part of the improvement.

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The same Laurelhurst street after utilities were undergrounded. View is toward Lake Washington and Mount Rainier.

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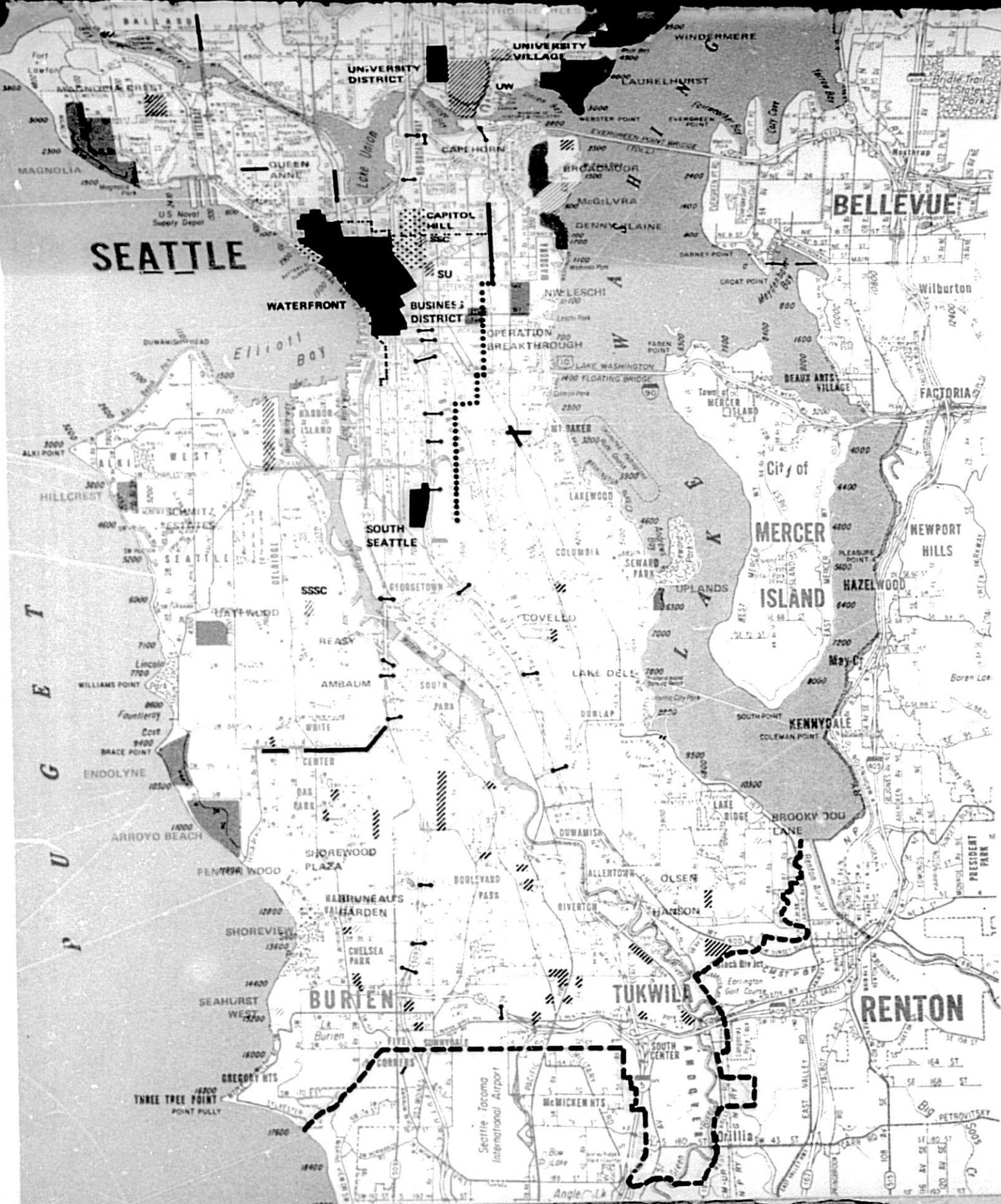
SEATTLE
BELLEVUE
UNIVERSITY DISTRICT
UNIVERSITY VILLAGE
UW
WINDERMERE
LAURELHURST
CAPE HORN
BROADMOOR
McGILVRA
DENNY-BLAINE
QUEEN ANNE
MAGNOLIA
MAGNOLIA CREST
Lake Union
CAPITOL HILL
SSC
SU
WATERFRONT
BUSINESS DISTRICT
NW LESCHI
OPERATION BREAKTHROUGH
LAKE WASHINGTON FLOATING BRIDGE
Elliott Bay
Wilburton
FACTORIA
BEAUX ARTS VILLAGE
Town of MERCER ISLAND
City of MERCER ISLAND
NEWPORT HILLS
HAZELWOOD
May Cr
HARBOR ISLAND
ALKI
WEST SEATTLE
HILLCREST
SCHMITZ ESTATES
SOUTH SEATTLE
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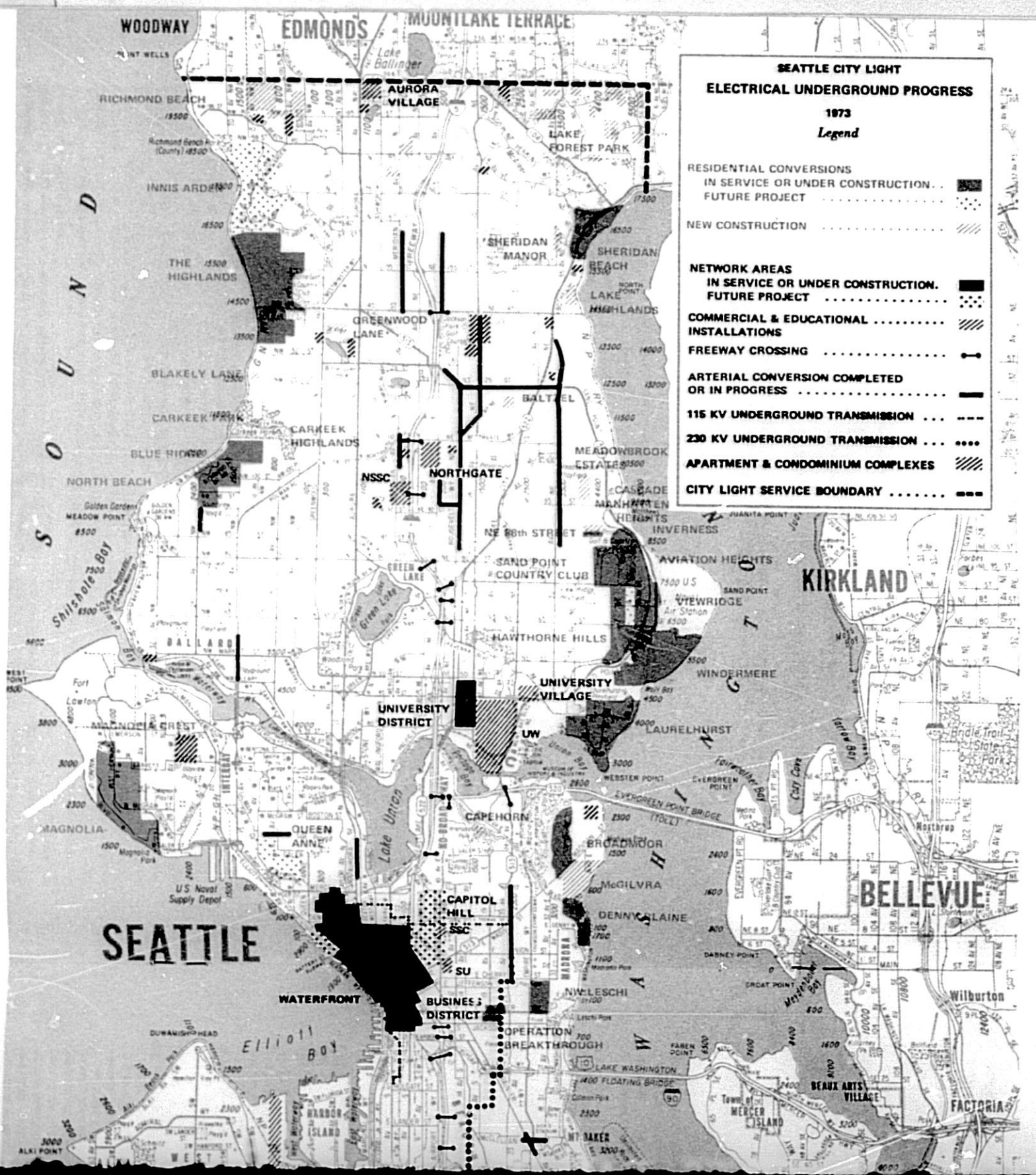
RIVERTON
HANSON
SHOREWOOD PLAZA
BOULEVARD PARK
HABRUNEAUX VALHARDEN
CHELSEA PARK
SHOREVIEW
SEAHURST
BURIEN
TUKWILA
RENTON
SOUTH CENTER
Seattle-Tacoma International Airport
McMICKEN HTS
GREGORY HTS
THREE TREE POINT
POINT PULLY
ENDOLYNE
ARROYO BEACH
PENTAGWOOD
PUGET SOUND
Bridle Trail State Park
PRESIDENT PARK


SEATTLE CITY LIGHT
ELECTRICAL UNDERGROUND PROGRESS
1973
Legend
RESIDENTIAL CONVERSIONS
IN SERVICE OR UNDER CONSTRUCTION
FUTURE PROJECT
NEW CONSTRUCTION
NETWORK AREAS
IN SERVICE OR UNDER CONSTRUCTION.
FUTURE PROJECT
COMMERCIAL & EDUCATIONAL INSTALLATIONS
FREEWAY CROSSING
ARTERIAL CONVERSION COMPLETED OR IN PROGRESS
115 KV UNDERGROUND TRANSMISSION
230 KV UNDERGROUND TRANSMISSION
APARTMENT & CONDOMINIUM COMPLEXES
CITY LIGHT SERVICE BOUNDARY
WOODWAY
EDMONDS
MOUNTLAKE TERRACE
AURORA VILLAGE
RICHMOND BEACH
INNIS ARDEN
THE HIGHLANDS
BLAKELY LANE
CARKEEK PARK
CARKEEK HIGHLANDS
BLUE RIDGE
NORTH BEACH
GREENWOOD LANE
SHERIDAN MANOR
SHERIDAN BEACH
LAKE FOREST PARK
LAKE HIGHLANDS
BALTZEL
MEADOWBROOK ESTATE
NSSC
NORTHGATE
NE 88th STREET
SAND POINT COUNTRY CLUB
AVIATION HEIGHTS
VIEWRIDGE
KIRKLAND
HAWTHORNE HILLS
WINDERMERE
UNIVERSITY VILLAGE
UNIVERSITY DISTRICT
UW
LAURELHURST
MAGNOLIA CREST
MAGNOLIA
QUEEN ANNE
CAPEHORN
BROADMOOR
McGILVRA
DENNY-SLAINE
BELLEVUE
CAPITOL HILL
SSC
SU
SEATTLE
WATERFRONT
BUSINESS DISTRICT
NWLESCHI
OPERATION BREAKTHROUGH
LAKE WASHINGTON
BEAUX ARTS VILLAGE
FACTORIA
Wilburton
Lake Union
Shilshole Bay
Elliott Bay
BALLARD
WEST SEATTLE
HARBOR ISLAND
Mercer Island

COMMERCIAL DISTRICT CONVERSIONS

Seattle's first conversions of commercial area utility wiring from overhead to underground installations began in about 1910 in the city's original business and financial district, centered around Pioneer Square. By that time, the jumble of telephone, telegraph and electric wires that had accumulated on the tall poles above the district's streets had become intolerable from the standpoints of both maintenance and appearance.

During the ensuing decades, underground utility systems expanded northwestward with the city's central business and shopping districts. The first commercial neighborhood outside Seattle's expanding central business district to be converted to underground utilities was one just north of Denny Way which became the site of the 1962 Seattle World Fair and of today's Seattle Center. Conversion work on the site and in surrounding streets was completed in 1960-1962.

The next "esthetic" conversion of an established Seattle commercial area outside the central business district to underground utilities was completed in 1968 in the University district. The undergrounding of 24 blocks of relatively high-density commercial and multi-unit housing construction in an area partly adjoining the University of Washington campus permitted 211 utility poles to be eliminated.

A federally assisted "urban redevelopment" project which transformed South Seattle from an aging residential and commercial neighborhood into a modern commercial-industrial park, completed in 1970, included conversion of the area to underground utilities. From this area, bounded by Fifth Avenue S., S. Andover Street, the Seattle Freeway and S. Alaska Street, with an area of 22 square blocks, some 74 utility poles were eliminated.

First Hill, where apartment buildings, hospitals and clinics are clustered, is expected to be the scene of overhead wire and utility pole removals in late 1973 and early 1974. Underground utility installations, including new street lighting circuits, were completed and energized in 1972 throughout a 33-block area bounded by Pine Street, Minor Avenue, Columbia Street and the Seattle Freeway. The cutting over of individual premises to the new underground systems got under way last year and should be virtually completed by the end of 1973.

The conversion of Seattle's downtown waterfront (Alaskan Way and parallel streets west of First Avenue, from Broad Street to S. Dearborn Street) was reactivated as a project in 1972, after being held in abeyance while waterfront area redevelopment planning matured. Underground electrical installations for the central portion of the project (between Battery and University Streets) were fully engineered in 1972, and a contract combining underground electrical installations and sewer construction for this portion of the project area is expected to be awarded by the Seattle Engineering Department during the summer of 1973.

Overhead wires and utility poles are to disappear by mid-1973 following completion of street light installations in two segments of Seattle's Yesler-Atlantic urban redevelopment area which face each other across E. Yesler Way: the six-block "Operation Breakthrough" project, which extends to S. Main Street between 17th and 20th Avenues S.; and the "Unity 71" project, which takes in E. Fir Street between 18th and 20th Avenues. Both of these Central Seattle underground conversions were federally funded and jointly administered by the Seattle Department of Community Development and the local Model City program.

ARTERIAL STREET CONVERSIONS

Seattle and King County arterial street underground conversions differ markedly from residential and commercial area conversions in respect both to the scope of the projects and to the method of financing them. The arterial projects, in addition to replacement of existing overhead utility wiring with new underground installations, have included as many of the following improvements as it was practical to incorporate in each project: roadway widening and resurfacing; curb and sidewalk construction; new street and traffic lights on metal standards, with underground circuits; and extensive landscaping including street tree plantings, planter beds and surface recontouring.

Southward view of Roosevelt Way N.E. from N.E. 110th Street shows completed arterial improvements including wire undergrounding, roadway widening, curbs, sidewalks and trees.

The costs of conversion to underground wiring on arterial streets in Seattle and adjacent suburbs have been borne by Seattle City Light and Pacific Northwest Bell — ultimately by their ratepayers — in respect both to installations in public rights of way and to conversions to underground utility services on individual properties. This 100-percent financing contrasts with the sharing of costs between utilities and benefited properties that has been the rule for area underground conversion projects.

Street improvements, street lights, traffic signals and the undergrounding of City and County communications circuits were financed through allocations from federal Traffic Operations Program to Increase Capacity and Safety ("TOPICS") funds, state Urban Arterials Board and highway funds, and proceeds of local Forward Thrust and general obligation bond issues. As noted above, the Seattle Engineering Department and the King County Department of Public Works coordinated their portions of the arterial improvement work inside and outside Seattle (respectively) with Seattle City Light and Pacific Northwest Bell.

Counting only the arterial improvement projects where overhead wires and utility poles have been physically removed, seven projects have been completed within Seattle proper and two in suburban King County, north of the city. A major arterial improvement in which both Seattle and King County are participating with the utilities is under construction along a portion of S.W. Roxbury Street which lies along Seattle's south city limit.

The seven arterial improvement projects within the city limits which feature complete removal of overhead wires and utility poles total 10.33 miles and 873 street addresses, some of which are apartment buildings containing a total of 972 dwelling units. From the portions of arterial streets listed below, 542 utility poles were removed:

35th AVENUE N.E. between N.E. 84th and N.E. 135th Streets; and ERICKSON PLACE N.E. between N.E. 135th Street and Lake City Way N.E.: 2.63 miles; 275 addresses including apartments with 59 units; 134 poles removed.

ROOSEVELT WAY N.E. between N.E. 92nd and N.E. 113th Streets; PINEHURST WAY N.E. between N.E. 113th and N.E. 117th Streets; and 15th AVENUE N.E. between N.E. 117th and N.E. 145th Streets: 2.75 miles; 198 addresses including apartments with 335 units; 138 poles removed.

N.E. 125th STREET between 37th Avenue N.E. and Roosevelt Way N.E.: 1.13 miles; 101 addresses including apartments with 74 units; 68 poles removed. [Project extension, ROOSEVELT WAY N.E. between N.E. 113th Street and 5th Avenue N.E. under construction, scheduled for completion in 1973.]

MERIDIAN AVENUE N. between N. 92nd and N. 112th Streets: 0.87 mile; 31 addresses including apartments with 202 units; 47 poles removed.

15th AVENUE N.W. between N.W. 49th and N.W. 58th Streets: 0.37 mile; 29 addresses; 43 poles removed. [Several wood street light standards to be replaced with metal standards.]

23rd AVENUE E. and 23rd AVENUE between E. Aloha and E. Cherry Streets: 1.33 miles; 226 addresses including apartments with 122 units; 88 poles removed.

SIXTH AVENUE between Union and James Streets, and intersecting streets between Fifth Avenue and the Seattle Freeway: 1.25 miles; 13 addresses including apartments with 180 units; 24 poles removed.

The two arterial improvement projects in King County north of Seattle which included complete wire undergrounding total 1.87 street miles, 175 addresses and 98 pole removals:

5th AVENUE N.E. between N.E. 145th and N.E. 165th Streets: one mile; 96 addresses; 44 poles removed.

MERIDIAN AVENUE N. between N. 145th and N. 163rd Streets; 0.87 mile; 79 addresses; 54 poles removed.

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Southward view of Roosevelt Way N.E. from N.E. 110th Street shows completed arterial improvements including wire undergrounding, roadway widening, curbs, sidewalks and trees.

Alaskan Way Viaduct structure included conduits for oil-filled 115,000-volt transmission cables connecting City Light's Massachusetts Street and Union Street Substations. Cables are underground between viaduct and substations.

At many arterial intersections throughout the city, the Engineering Department has been installing TOPICS traffic controls and new street lighting with underground connections. These installations are "spot" visual improvements which will facilitate the eventual underground conversion of the intersecting arterial streets.

Conversion of Olson Place S.W. and portions of S.W. Roxbury Street and Roosevelt Way N.E. is continuing into 1973. Aside from these projects, the Seattle-King County arterial undergrounding program was deferred during 1972 in the same manner as City of Seattle projects were deferred, for financial reasons. A new system has been established with King County to set up specific undergrounding priorities for 1973 based on available revenues.

Seattle City Light is continuing an aggressive search for sources of financial support for arterial undergrounding projects.

NEW UNDERGROUND CONSTRUCTION

Underground installation of new utility facilities that it would have been technically feasible and economically preferable to install overhead might be termed "anticipatory" esthetic undergrounding. Seattle City Light's underground high-voltage transmission lines, underground (or concealed) freeway cable crossings, and underground feeder lines from substations exemplify decisions not to install overhead wires, poles and structures that will be replaced by underground equivalents before their usefulness is exhausted.

In 1966, Seattle City Light energized 4.2 miles of 230,000-volt pipe-type underground transmission cable connecting its new East Pine Substation with overhead transmission lines crossing Beacon Hill; and 2.4 miles of 115,000-volt pipe-type underground transmission cable connecting East Pine with Broad Street Receiving Substation. Placing these 6.6 miles of transmission line under residential and commercial area streets avoided carrying lines over the streets on probably 66 or more highly visible poles or towers.

In 1971 and 1972, Seattle City Light energized four additional 115,000-volt circuits so constructed and located – two in pipe-type underground installations and two concealed beneath the lower roadway of the Alaskan Way viaduct – that they obviated the necessity of erecting 43 tall transmission-type metal poles which would have been visually unacceptable in the downtown waterfront environment. One 2.7-mile underground circuit interconnects City Light's Broad Street and Massachusetts Street Receiving Substations; the other three circuits will supply the new Union Street substation from Massachusetts Street.

The portions of City Light's next two transmission lines which traverse commercial and residential districts will do so underground. The first of these, scheduled for construction beginning late in 1973, is to provide a second link between East Pine Substation and 230,000-volt transmission lines near Fourth Avenue S. and S. Spokane Street. It will be installed under nonarterial streets north and east from near the intersection of Sixth Avenue S. and Airport Way S. Later, a second 230,000-volt transmission line supply to West Seattle's new Delridge Substation will be constructed from South Substation; this will go under residential streets from the south margin of Puget Park to the substation at 25th Avenue S.W. and S.W. Juneau Street.

Construction underground or under bridges of all electric lines crossing Interstate 5 in Seattle City Light's service area, from the Snohomish County line to Tukwila, has been essentially completed. Similar treatment of lines crossing new secondary state highways in the south portion of the service area, SR-509 and SR-518, has been keeping pace with highway construction. Undergrounding of electrical lines on the route of the proposed Bay Freeway was abandoned in 1972 when Seattle voters disapproved constructing the freeway. Additional undergrounding of freeway wire crossings may be necessary if and when Interstate 90 is completed into Seattle from the east.

New Union Street Substation near Seattle's downtown waterfront is totally enclosed. Underground electrical feeders will supply much of the city's central business district from this facility.

A feature of the new Union Street Substation (due for energization in 1973) that makes it visually acceptable is the absence of outdoor structures and aerial lines. Feeders which will supply much of downtown Seattle from the station are underground, as are those of City Light's other new, large substations including East Pine, where seven additional underground feeders that will serve the station's neighborhood are under construction.

Measures short of complete undergrounding that help to minimize the visual blight of overhead wires and utility poles have been employed in many Seattle neighborhoods by City Light and Pacific Northwest Bell, which own and jointly use (with CATV companies and others) most of the community's poles. Partial undergrounding has diminished the number of poles needed on some streets and facilitated future conversion to underground. Rearrangement of overhead facilities has permitted fewer and shorter poles to be retained in other places. Relocation of poles to less visible routes, as in alleys, has produced results comparable to what can be accomplished by undergrounding, in certain situations.

Insofar as alternative methods can deal successfully with visual blight, they contribute to the success of undergrounding programs by permitting more effort to be concentrated on the highest priority undergrounding projects. To help Seattle City Light determine which undergrounding projects deserve high priority, according to the community's thinking, Lighting Superintendent Vickery late in 1972 assembled an "Out of Sight Committee" of neighborhood and organization representatives to formulate undergrounding policy recommendations for the utility.

Construction to provide underground utility services to newly erected buildings or developments in districts otherwise served by overhead systems is another "anticipatory" undergrounding activity that frequently forestalls the installation of additional overhead facilities. For Seattle City Light in 1972 alone, such installations included 48 to serve industrial and commercial establishments, 12 to serve apartment buildings, four to serve schools and churches, one to serve a hospital, six to serve public buildings, seven to serve multi-unit residences such as duplexes, and seven to serve residential housing developments.

Finally, major building and renovation projects in areas of the city already served by underground utility networks call for continual augmentation of system capacity and – as systems grow more complex – continual improvements to safeguard system reliability. In 1972, Seattle City Light provided new or augmented service from its downtown networks to seven completed new buildings and building renovation projects of which two – the new Financial Center and the new Nordstrom department store – alone added up to 15,000 kilovolt-amperes of system capacity requirement. Other new buildings representing substantial future electric system load additions are filling in the city's skyline.

Current limiters (which confine effects of equipment failures to within small elements of electrical networks) were installed to improve service reliability of one of City Light's two 4,000-volt downtown underground networks in 1972 and will be installed on the other system during 1973. Taken together, underground network capacity additions and system improvements accounted for more than one-fourth of Seattle City Light's entire $57,351,819 investment in wire undergrounding programs from 1960 through 1972.

Seattle City Light spent $6,788,000 on undergrounding in 1972, only $85,000 less than the goal projected in the City's 1972 capital improvement program. That the goal was not met resulted from impediments beyond immediate control. In 1973, the City expects to meet or exceed undergrounding goals for the year. Of the $6,788,000 City Light spent on undergrounding in 1972, $5,214,000 can be classed as beautification-type undergrounding, of which $550,000 was payable by others. The remaining $4,664,000 was 7.8 percent of City Light's 1972 electric revenue.

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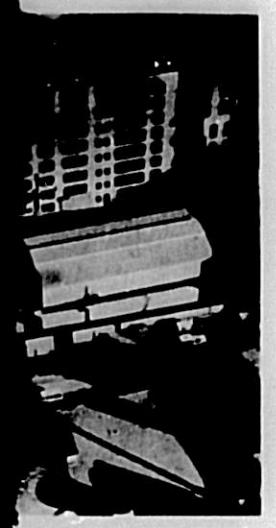

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① Lights f. + trees

② W/o Engr - No Good, kill guy w/ unknown location of wire. - no good

③ → ? Specs on Signal System.

BRADLEY PRINTING & LITHOGRAPH CO., SEATTLE

Annual Reports-
U'Grnd Wiring

THE CITY OF SEATTLE

WES UHLMAN, *Mayor*

BOARD OF PUBLIC WORKS DEPARTMENT

BETTY L. McFARLANE, *Executive Secretary*

303 Seattle Municipal Building • Seattle, Washington 98104 • 583-2040

BOARD OF PUBLIC WORKS
GORDON VICKERY, *Supt. of Lighting Chairman*
DAVID L. TOWNE, *Supt. of Parks and Recreation*
KENNETH M. LOWTHIAN, *Supt. of Water*
ALFRED PETTY, *Supt. of Buildings*
PAUL A. WIATRAK, *Acting City Engineer*

August 14, 1974

Re: 1973 Seattle Underground
Wiring Report

Via: Mayor Wes Uhlman

ROUTING	DATE	INITIAL
ACTION		
FILE	✓	
INFORMATION		
JMB/EWO/THO		

City Council
City of Seattle

Honorable Members:

In compliance with Section VIII of City Council Resolution No. 21340, the Board of Public Works herewith submits the 1973 Seattle Underground Wiring Report for the period ended December 31, 1973.

Additional copies are available from this office upon request.

Respectfully submitted,

BOARD OF PUBLIC WORKS

Betty L. McFarlane

Betty L. McFarlane
Executive Secretary

SEATTLE ENG DEPT
AUG 19 9 56 AM '74

BLM:fb
Att.

cc: Superintendent of Lighting
City Engineer

Annual Report - U'grnd Wiring

Mr. Robert J. Gulino, P.E.
City Engineer

THE CITY OF SEATTLE

WES UHLMAN, MAYOR

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ALFRED PETTY, SUPT. OF BUILDINGS
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KENNETH M. LOWTHIAN, SUPT. OF WATER
GORDON F. VICKERY, SUPT. OF LIGHTING
DAVID L. TOWNE, SUPT. OF PARKS
AND RECREATION

October 26, 1973

Re: Final Draft
Underground Wiring Policy

ROUTING	DATE	INITIAL
ACTION		
FILE	✓	
INFORMATION		
~~PMB~~	~~EWO~~	~~THO~~
WEDS		
RAS		

Via: Mayor Wes Uhlman

Councilman Wayne Larkin, Chairman
Utilities Committee of the City Council
City of Seattle

Dear Mr. Larkin:

The Board of Public Works, in regular session October 24, discussed the attached draft underground wiring policy.

The question arose as to whether this proposed underground wiring policy was intended to be a City policy, or a policy of City Light. Gordon Vickery, Superintendent of Lighting, stated that it was a City Light policy, only.

It was the consensus that the attached draft policy should be reworded to indicate that it is a City Light policy. The Board further recommended that Resolution No. 21340 should be reviewed and redrafted incorporating City Light's policy. The resolution may then be adopted as a new City policy. The City should address itself to how the funds are to be used and how the utilities will be expected to participate.

Attached for your review and information are communications from the City Engineer and the Superintendent of Water regarding the underground policy statement.

The Board and its utility departments will be interested and available to work with your committee in drafting a new City undergrounding policy.

SEATTLE ENG DEPT
NOV 5 10 04 PM '73

Respectfully,

BOARD OF PUBLIC WORKS

Alfred Petty

Alfred Petty
Chairman

BLM:lm
att.

cc: Board of Public Works Members

Annual - Reports - U'gnd Wiring

CSS 7.11

10/23

MEMORANDUM

To Board of Public Works

By R. J. Gulino, P.E., City Engr. Sgd Robert J. Gulino Date October 23 19 73

Subject City Light Underground Wiring Policy Statement.

1. The policy generally conforms to Resolution 21340 which is the current official City policy on undergrounding. Present policy provides for the Municipal Art Commission to assist in developing plans for location and timing. The new policy requires the Board of Public Works, in consultation with the Department of Community Development, to conduct public hearings and develop a 10-year program of location and timing for underground projects. This stated policy is too indefinite. For effective action, there should be a committee, appointed and approved by the Mayor and City Council, to replace the previous function of the Municipal Art Commission. It would appear that such an agency is a requirement if the arterial undergrounding projects are to be partially funded with Forward Thrust monies because of the review requirements in the Forward Thrust Bond Issue.

2. The ability of other departments of the City to progress with City Light must be supported by the City's legislative body if it concurs with the proposed policy. Forward Thrust funds will be exhausted before the current three-year City Light undergrounding program is completed. Under present legislation, gas tax funds cannot be used for arterial undergrounding except as this work is done as a part of street construction. Therefore, prior to the completion of the Beacon Avenue project in the current three-year program, the City Engineer will be without funds to fund the street lighting and traffic signal portions of the underground program. Obviously, further departmental cooperation with the proposed policy will require either a new source of City funds (bond issue) or a change in State legislation relating to gas tax funds.

3. Paragraph 4a of the proposal, which requires that the utilities or agency pay for the cost of work on abutting private property where an arterial may be located in an existing underground project established by City ordinances, may be in conflict with existing underground ordinances which require the property owner to pay this cost. Arterials affected by this ambiguity include Western Avenue, south of Denny Way, and Alaskan Way from King Street to Denny Way.

4. The policy does not address itself to the problem of Metro transit facilities. Existing underground district ordinances exclude trolley wires. However, if the desirable aesthetic effect of the City Light undergrounding is not to be lost in

these districts in which electrical trolleys now run or into which they may be extended in the future, the DC feeder wires, and other pole support systems, should be required to conform to the undergrounding standards. An example of this problem right now is the 23rd Avenue South undergrounding in which the Transit operation may remain on wood poles after the rest of the system is undergrounded.

5. It is evident from the recent hearing before the Utilities Committee of the City Council that a policy for financing undergrounding in neighborhoods' commercial districts will be required. The present policy does not address itself adequately to this subject, in our opinion.

WEB:mmps:mm

cc: A. E. Maronek
E. W. Ott
R. A. Simonson

Annual Rpts - U'grd wiring

CITY OF SEATTLE
BOARD OF PUBLIC WORKS

MEMORANDUM

To ALL BOARD OF PUBLIC WORKS MEMBERS

From Betty L. McFarlane, Secretary BLM Date October 17, 1973

Subject Proposed Underground Wiring Policy

The Board of Public Works, in regular session today, discussed the Proposed Underground Wiring Policy which is attached.

The Board had previous recommendations for changes and felt that this policy could be adopted with modifications and transmitted as a Board policy to the City Council.

May we have your comments and recommendations prior to the Board's Wednesday meeting, October 24, 1973, with Councilman Larkin.

City Light CIP should be reviewed as it impacts on other Board Departments before City Light's budget hearing November 2nd, as it relates to this matter.

BLM:fb

Att.

1 att

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WEPS		
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INFORMATION		

SEATTLE ENG DEPT
OCT 19 8 25 AM '73

C88 14.27

Annual Reports - U'grd Wiring

Mr. Robert J. Gulino, P.E.
City Engineer

THE CITY OF SEATTLE

WES UHLMAN, MAYOR

BOARD OF PUBLIC WORKS

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KENNETH M. LOWTHIAN, SUPT. OF WATER
GORDON F. VICKERY, SUPT. OF LIGHTING
DAVID L. TOWNE, SUPT. OF PARKS
AND RECREATION

October 10, 1973

Re: Underground Wiring Policies

ROUTING	DATE	INITIAL
ACTION		
INFORMATION		
RJG		
EWO/THO		
GEPS/RAS		
AEW		

OCT 11 11 17 AM '73
SEATTLE ENG DEPT

Via: Mayor Wes Uhlman

Councilman Wayne Larkin
Chairman, Utilities Committee
of the City Council
City of Seattle

Dear Mr. Larkin:

The Board of Public Works had before it, in regular session today, a briefing by City Light on proposed City underground wiring policies.

It is understood that your Utilities Committee will be meeting with representatives from City Light, Department of Community Development and the City Engineering Department to discuss the proposed policy statement on October 17.

After your meeting, the Board would appreciate the opportunity to discuss the matter with you prior to their formal action on same.

Perhaps you could be available to meet with the Board October 17 at 11:30 a.m. Please advise.

Yours very truly,

BOARD OF PUBLIC WORKS

Betty L. McFarlane

Betty L. McFarlane
Secretary

BLM:lm

cc: Board of Public Works Members

DISCUSSION: City Underground Wiring Policies Util Comm 10-17-73

Annual Reports - U'grd Wiring

THE CITY COUNCIL OF THE CITY OF SEATTLE

1106 SEATTLE MUNICIPAL BUILDING
600 FOURTH AVENUE, SEATTLE, WASHINGTON 98104
TELEPHONE 583-2640

LIEM ENG TUAI
PRESIDENT OF THE COUNCIL
583-2357

BRUCE K. CHAPMAN
CHAIRMAN
PARKS & PUBLIC GROUNDS COMMITTEE
583-2364

GEORGE E. COOLEY
CHAIRMAN
FINANCE COMMITTEE
583-2359

TIM HILL
CHAIRMAN
TRANSPORTATION COMMITTEE
583-2356

PHYLLIS LAMPHERE
CHAIRMAN
INTERGOVERNMENTAL RELATIONS COMMITTEE
583-2355

WAYNE D. LARKIN
CHAIRMAN
UTILITIES COMMITTEE
583-2358

JOHN R. MILLER
CHAIRMAN
PLANNING & URBAN DEVELOPMENT COMMITTEE
583-2365

SAM SMITH
CHAIRMAN
PUBLIC SAFETY & HEALTH COMMITTEE
583-2367

JEANETTE WILLIAMS
CHAIRMAN
HUMAN RESOURCES & JUDICIARY COMMITTEE
583-2366

ACTION
DHD
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FILE
INFORMATION
RJG
EWD/TAO

October 3, 1973

Robert J. Gulino, P. E.
City Engineer
City of Seattle

x-Policy

Dear Bob:

Possible priorities for selecting neighborhoods for underground wiring projects will be discussed during the weekly meeting of the Utilities Committee on October 17 at 9:00 a.m.. Up to now there has been no priority system for choosing neighborhoods for undergrounding projects, especially in business districts. It may be that establishment of a priority system appears to be feasible. If it does, we will proceed.

We will meet to discuss and review City Light's Citizen committee's policy statement regarding all underground projects. Accordingly, I would request that you send a representative from your department to sit in on the discussion while we review this undergrounding policy statement. If it appears that a public hearing on the subject would be worthwhile, we will probably schedule one after this initial discussion.

Sincerely,

Wayne

WAYNE D. LARKIN, Chairman
Utilities Committee
Seattle City Council

WDL:sr:dk

SEATTLE ENG DEPT
OCT 4 9 49 AM '73

Annual Reports — U' grd Wiring

THE CITY OF SEATTLE

WES UHLMAN, MAYOR

BOARD OF PUBLIC WORKS

BETTY L. McFARLANE, SECRETARY

303 Seattle Municipal Building • Seattle, Washington 98104 • 583-2040

BOARD OF PUBLIC WORKS
ALFRED PETTY, SUPT. OF BUILDINGS, CHAIRMAN
ROBERT J. GULINO, CITY ENGINEER
KENNETH M. LOWTHIAN, SUPT. OF WATER
GORDON F. VICKERY, SUPT. OF LIGHTING
DAVID L. TOWNE, SUPT. OF PARKS AND RECREATION

June 27, 1973

Re: Annual Underground Wiring Report

Via: Mayor Wes Uhlman

ROUTING	DATE	INITIAL
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City Council
City of Seattle

Honorable Members:

In compliance with Section VIII of City Council Resolution No. 21340, the Board of Public Works herewith submits the Annual Underground Wiring Report for the Period ended March 31, 1973.

Additional copies are available from this office upon request.

Respectfully submitted,

BOARD OF PUBLIC WORKS

Betty L. McFarlane

Betty L. McFarlane
Secretary

BLM:fb
Att.

cc: Superintendent of Lighting
✓City Engineer

SEATTLE ENG DEPT
JUL 2 10 50 AM '73

Mr. Robert J. Gulino
City Engineer

THE CITY OF SEATTLE

WES UHLMAN, MAYOR

BOARD OF PUBLIC WORKS

BETTY L. McFARLANE, SECRETARY

303 Seattle Municipal Building • Seattle, Washington 98104 • 583-2040

BOARD OF PUBLIC WORKS
KENNETH M. LOWTHIAN, SUPT. OF WATER, CHAIRMAN
HANS A. THOMPSON, SUPT. OF PARKS AND RECREATION
ALFRED PETTY, SUPT. OF BUILDINGS
ROBERT J. GULINO, CITY ENGINEER
GORDON F. VICKERY, SUPT. OF LIGHTING

Re: Annual Underground Wiring Report

July 5, 1972

VIA: Mayor Wes Uhlman

City Council
City of Seattle

Honorable Members:

In compliance with Section VIII of City Council Resolution No. 21340, the Board of Public Works herewith submits the Annual Undergrounding Wiring Report for the Period ended December 31, 1971.

Additional copies are available from this office upon request.

Respectfully submitted

BOARD OF PUBLIC WORKS

Betty L. McFarlane

Betty L. McFarlane
Secretary

BLM:lm
Att.

cc: Superintendent of Lighting
City Engineer

ROUTING	DATE	INITIAL
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C.F. 273266 Annual Underground Wiring Report for period ended December 31, 1971. 7-20-72
Util Comm

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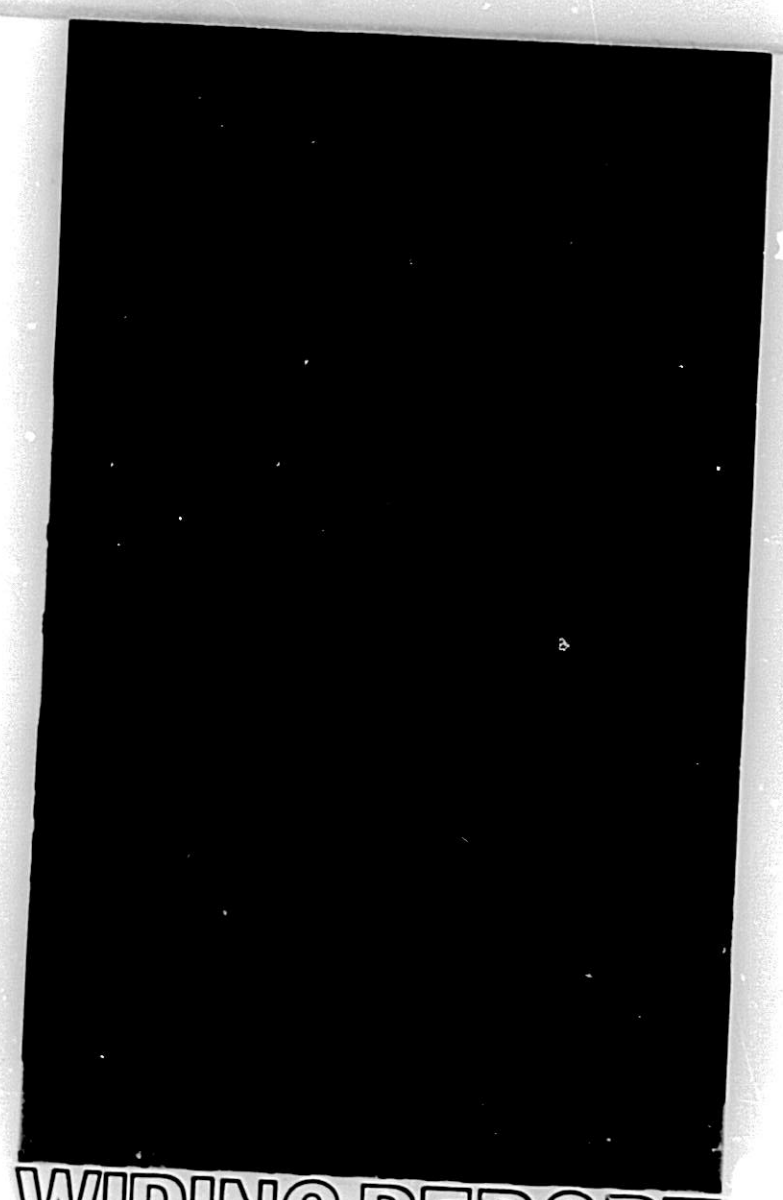

WIRING REPORT

FOR PERIOD ENDED DECEMBER 31, 1971

ISSUED BY THE BOARD OF PUBLIC WORKS OF THE CITY OF SEATTLE IN COMPLIANCE WITH SECTION VIII OF CITY COUNCIL RESOLUTION 21340

SEATTLE ENG DEPT
JUL 6 4 36 PM '72

CITY OF SEATTLE

ELECTED OFFICIALS
December 31, 1971

Wes Uhlman	*Mayor*
Carl G. Erlandson	*City Comptroller and City Clerk*
E. Lorentzen	*City Treasurer*
Alfred L. Newbould	*Corporation Counsel*
Charles M. Carroll	*President, City Council*
Bruce Chapman	*Council Member*
George E. Cooley	*Council Member*
Tim Hill	*Council Member*
Phyllis Lamphere	*Council Member*
Wayne D. Larkin	*Council Member*
Sam Smith	*Council Member*
Liem E. Tuai	*Council Member*
Jeanette Williams	*Council Member*

BOARD OF PUBLIC WORKS
December 31, 1971

Kenneth M. Lowthian
Superintendent of Water,
Chairman

John M. Nelson
Superintendent of Lighting,
Vice-Chairman

Robert J. Gulino
City Engineer

Alfred Petty
Superintendent of Buildings

Hans A. Thompson
Superintendent of Parks
and Recreation

Betty L. McFarlane
Secretary

Public policy in Seattle has long favored underground installation of utility wiring. Implementation of the policy has been directed toward avoiding or minimizing the proliferation of new overhead lines and also toward actively securing the removal of existing overhead circuitry. The policy applies to communications and traffic-signal systems as well as to electrical distribution, transmission and street-lighting apparatus.

To minimize the number of wire-bearing poles in view along Seattle streets, utilities operating overhead systems have arranged to use most poles jointly for many years. In the most densely built-up areas of the city, underground utility networks have gradually replaced overhead facilities as the latter became congested and unsightly. Conversion to underground wiring began in downtown Seattle as early as 1910.

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UNDERGROUND WIRI

FOR THE PERIOD ENDED DEC

ISSUED BY THE BOARD OF PUBLIC WORKS
IN COMPLIANCE WITH SECTION VIII OF CITY COU

ty Clerk

L. McFarlane
tary

SEATTLE UNDERGROUNDING

Public policy in Seattle has long favored underground installation of utility wiring. Implementation of the policy has been directed toward avoiding or minimizing the proliferation of new overhead lines and also toward actively securing the removal of existing overhead circuitry. The policy applies to communications and traffic-signal systems as well as to electrical distribution, transmission and street-lighting apparatus.

To minimize the number of wire-bearing poles in view along Seattle streets, utilities operating overhead systems have arranged to use most poles jointly for many years. In the most densely built-up areas of the city, underground utility networks have gradually replaced overhead facilities as the latter became congested and unsightly. Conversion to underground wiring began in downtown Seattle as early as 1910.

In the same era, the Seattle area saw its first underground utility installations to serve a suburban residential development: The Highlands. In the mid-1920s, the municipal Lighting Department and Pacific Northwest Bell Telephone Company's predecessor company constructed underground systems to serve Broadmoor, a quality residential development within the city.

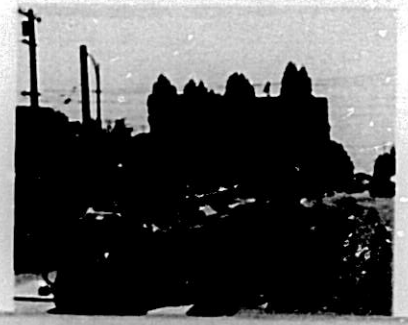
The coinciding rapid electrification and accelerated building activity of the late 1920s stimulated development of the Lighting Department's modern underground distribution networks downtown, with their increased capacity and improved reliability. After the City acquired all operating properties of the Puget Sound Power & Light Company within the Lighting Department's service area in 1951, the duplicate underground networks which had served the central business district were consolidated into the present three-phase, four-wire system.

Parallel overhead distribution facilities that had been serving Seattle and its immediate suburbs were also merged after 1951, to the substantial benefit of the appearance of many streets. Gradual conversion from overhead to underground wiring in districts bordering Seattle's central business district to the north, particularly, continued.

By 1960, the Lighting Department was ready to propose a new undergrounding and facilities-beautification program which included the undergrounding of wiring throughout the site of the projected Seattle World Fair and nearby streets, the undergrounding of all Freeway wire overcrossings, the extension of existing underground network service areas, and improvement of the appearance of overhead distribution facilities and related substations. This proposed program was adopted by the Seattle City Council in April 1960.

The Council's 1960 resolution also set in motion Lighting Department cooperation with sponsors of new construction to provide underground service to locations within established overhead distribution areas and with residential neighborhoods that wished to sponsor conversion of their utility services from existing overhead to new underground systems. During the 11¾ years from passage of the 1960 resolution to the end of 1971, the Lighting Department expended $54,305,083 on undergrounding and beautification activities, including $3,203,211 of contributions toward the financing of certain projects due from owners of directly benefited properties.

Of this investment, $36,600,998 went into undergrounding projects outside the downtown Seattle network area, $13,684,405 went into downtown network improvements and additions, and $4,019,680 went into residential street-lighting improvements, overhead-system appearance betterments and substation landscaping.



RESOLUTION 21340

The most recent and comprehensive expression of Seattle's public wire-undergrounding policy is City Council Resolution 21340, adopted January 29, 1968, and reproduced in full on page 2 of this report. Lighting Department expenditures mentioned above mainly went into programs implementing the various sections of this resolution from 1968 on. Engineering Department funds from federal, state and local sources have also been expended on wire undergrounding during this period, chiefly to provide underground connections for improved street lighting and traffic signals along principal arterial streets where other improvements were constructed.

Arterial street improvements including wire undergrounding form the core program devised to implement Resolution 21340—specifically, Sections I, II and VII of the resolution in their entirely and the first sentence of Section VI. Roadway widening and paving, curb and sidewalk construction, landscaping, and wire undergrounding along selected "principal" arterials and at "scenic points" are to be coordinated and accomplished, according to these sections, at no cost to owners of abutting properties.

Section VII of the resolution proposes that conversion of all the city's principal arterial streets to underground utility wiring be accom-

UNDERGROUND WIRING REPORT

FOR THE PERIOD ENDED DECEMBER 31, 1971

ISSUED BY THE BOARD OF PUBLIC WORKS OF THE CITY OF SEATTLE
IN COMPLIANCE WITH SECTION VIII OF CITY COUNCIL RESOLUTION 21340

RESOLUTION 21340

A RESOLUTION extending the existing program for placing overhead electric, telephone, telegraph and other facilities underground, and coordinating such program with general street improvement and beautification.

WHEREAS, by Ordinance 90695 the City has established certain areas in which such overhead wires are to be placed underground; and

WHEREAS, pursuant to Resolution 18456 the City approved and adopted a program of the Department of Lighting to expand its underground facilities; and

WHEREAS, it is now deemed proper and necessary that such program be expanded and also extended to encourage the undergrounding of overhead wires regardless of ownership; and

WHEREAS, at present the Departments of Lighting and Engineering under the supervision of the Board of Public Works prepare and submit to the legislative authority of the City six-year Capital Improvement Programs relating to, among other things, both the undergrounding of electric facilities and for the general improvement, beautification and landscaping of certain areas of the City; and

WHEREAS, the six-year Capital Improvement Program for 1968-73 relating to undergrounding electric facilities presently proposed by the Department of Lighting contemplates expenditure of $67 million for such purposes, including $3 million a year for underground facilities along principal arterial streets, and the Superintendent of Lighting has recommended (C. F. 259185) the adoption of a comprehensive policy relating to the undergrounding of overhead facilities; Now Therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SEATTLE AS FOLLOWS, THE MAYOR CONCURRING:

It is declared the policy of the City to promote and encourage participation by all affected City departments and private agencies in programs to place existing overhead electric, telephone, telegraph and other facilities underground, consistent with the maintenance of low electric rates and provision of reliable service, to improve and beautify principal arterial streets; and to encourage further participation by such departments and private agencies in research efforts to lower the present cost thereof. Such policy shall be carried out by the following programs:

I. The Departments of Lighting and Engineering, under the supervision of the Board of Public Works, shall include within their portion of the six-year Capital Improvement Program, funds providing for an orderly program of placing overhead facilities underground, together with street beautification and improvement projects, along principal arterial streets and scenic points.

II. The Departments of Lighting and Engineering under the supervision of the Board of Public Works, within the confines of available funds, shall coordinate implementation of each six-year Capital Improvement Program so that (a) the widening of principal arterial streets be accompanied by the undergrounding of overhead facilities; and (b) that the placing underground of overhead facilities be accompanied by appropriate street improvements, landscaping and other beautification projects.

III. The Municipal Art Commission shall assist in the development of a plan for the location and timing of the program contemplated by this Resolution and shall review the six-year Capital Improvement Program as it pertains thereto.

IV. Whenever the formation of a local improvement district is contemplated for the improvement of any street by paving, the City shall encourage and solicit agreement from the affected property owners that the placing of existing overhead facilities underground be a part of such improvement, unless evidence is clear that benefits therefrom cannot be sustained or other special circumstances indicate impracticability or undue hardship.

V. Distribution of electric energy, telephone and other utility services to all new construction shall be accomplished insofar as practicable by underground facilities.

VI. The cost of placing existing overhead facilities underground on principal arterial streets and at scenic points shall be borne entirely by the appropriate utility or agency and shall include the cost of such work on the abutting private properties. The cost of placing overhead facilities underground in public rights of way in neighborhood conversion projects shall be shared with the abutting property owners to a substantial extent by the appropriate utility or agency. When a residential neighborhood desires to convert to underground wiring for esthetic reasons and when conversion is undertaken in high load density areas, the abutting property owners shall arrange for all work on their property necessary to accept service from the underground system.

VII. It shall be the policy of The City of Seattle and of various City Departments to ultimately place all overhead utilities underground along all principal arterial streets within the City and it is the declared purpose of the City to make every effort to accomplish this within a period of twenty-five years.

VIII. The Board of Public Works shall issue, during the 1st quarter of each year, a detailed Annual Underground Wiring Report including:

(a) a resume of progress to date to implement this Resolution; and

(b) an outline of the specific program contemplated to implement this Resolution during the forthcoming year.

PASSED the City Council the 29th day of January, 1968, and signed by me in open session in authentication of its passage this 29th day of January, 1968.

FLOYD C. MILLER

President of the City Council

Filed by me this 29th day of January, 1968.

ATTEST:

C. G. ERLANDSON

City Comptroller and City Clerk

By:

W. A. PERINE

Deputy Clerk

I concur:

J. D. BRAMAN

MAYOR

plished "within a period of twenty-five years" but indicates no particular sequence in which arterials should be scheduled for improvement. Arterial improvement projects implementing Resolution 21340 will normally be joint projects of the Engineering and Lighting Departments, Pacific Northwest Bell and one or another of the franchised community-antenna television cable (CATV) concerns serving the city.

Section III of the resolution invokes the aid of the Municipal Art Commission in planning programs to implement the resolution. A special committee of Commission members recommended several arterial street improvements including wire undergrounding along six named arterials. The evolution of this delegated planning activity was traced in some detail on pages 11 and 12 of the Underground Wiring Report for 1970.

Section IV of the resolution proposes that residential neighborhood street-paving projects sponsored by local improvement districts (LIDs) include wire undergrounding whenever affected property owners can be persuaded to combine the two improvements. As of the end of 1971, no LID petition for a combined paving and wire-undergrounding project had been received.

Section V requires underground utility services for all new construction in Seattle "insofar as practicable." Because the additional cost of underground service in areas served by overhead systems has been kept nominal by the utilities, many builders have found it "practicable" to incur the additional cost. In underground service areas there is no option, of course.

Section VI requires owners of properties directly benefited by wire undergrounding projects in residential neighborhoods and in "high load

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Section VI requires owners of properties directly benefited by wire undergrounding projects in residential neighborhoods and in "high load density" commercial districts to pay all the costs of work **on their own properties** necessary to enable them to receive service from underground facilities. Benefited residential properties are also to be assessed a portion of the costs of the necessary conversion work in public rights of way, but the utilities involved will share these costs "to a substantial extent."

In commercial district conversions, the utilities involved are to assume all the costs of work in the public right of way. In undergrounding projects that are officially designated "principal arterial" conversions, utilities are required to bear **all** conversion costs covering work both in public rights of way and on private property.

It should be noted that Resolution 21340 does not apply to the entire range of utility undergrounding activities in Seattle or to undergrounding outside the city limits. The foregoing analysis shows that Sections I, II, IV, VI and VII are concerned with **conversions** from overhead to underground wiring along "principal" arterials and at "scenic points," in residential neighborhoods and commercial centers. Section V is concerned with service to new construction. Sections III and VIII are concerned, respectively, with planning and reporting on the implementation of the other sections.

FINANCES

Construction funds counted on to finance Lighting Department programs devised to carry out Resolution 21340 dwindled when electric utility revenues failed to meet projections in 1969, the city business and occupation tax levy based on these revenues was increased to eight per cent in 1970, and the City terminated its annual $475,000 partial compensation of the Department for street lighting. In order to maintain support for its ongoing capital improvements construction program, the Department in mid-1971 requested City Council authorization of electric-rate increases averaging eleven per cent, which included four per cent for wire undergrounding programs stemming from Resolution 21340.

Following a public hearing on the matter, the Council concluded that any rate increase beyond the minimum necessary to maintain the financial integrity of the Lighting Department would cause undue hardship for many rate payers afflicted by the depressed state of the community's economy. Balancing the Lighting Department's need to show adequate revenue when seeking to market revenue bonds (which must finance much of its necessary capital construction) against the need of the community to keep its electric rates low, the Council decided to authorize rate increases averaging only seven per cent.

In authorizing the lesser rate increase, the City Council was aware that underground conversion construction implementing Resolution 21340 policies would have to be deferred to a substantial extent. The reason underground conversions rather than other capital construction must be deferred is that, except in rare situations where electric load concentration actually forces conversion, underground conversion is the only construction that **can** safely be deferred. All other capital construction is closely geared to emerging electric service requirements. The additional investment in esthetic benefits represented by higher cost underground construction when it is optional is offset by no increase in capacity and revenue. Although Resolution 21340 shows that the City Council accords high priority to esthetic benefits, its action on the proposed electric rate increase indicates that system adequacy remains the Council's first concern.

Residents of West Seattle's Gatewood Hill enjoyed uncluttered Puget Sound views when their LID utility undergrounding project was completed.

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Residents of West Seattle's Gatewood Hill enjoyed uncluttered Puget Sound views when their LID utility undergrounding project was completed.

In 1971, the Lighting Department and Pacific Northwest Bell collaborated with the Engineering Department in essentially completing underground conversions along portion of four arterials in Seattle's North End with a total length of 6⅓ miles; and with the King County Department of Public Works in completing conversions along mile-long portions of two arterials north of the city limits. At year-end, conversion work was still in progress along portions (total length: 3.6 miles) of two Seattle arterials and portions of S.W. Roxbury Street, one side of which is in suburban King County and the other inside the city.

ARTERIAL CONVERSIONS

The two North End arterial conversion projects completed in 1971 except for removal of some poles north of N.E. 125th Street are:

The **Roosevelt Way N.E.-Pinehurst Way N.E.-15th Avenue N.E.** conversion between N.E. 92nd and N.E. 145th Streets. Roadway widening and paving, curb and sidewalk construction, traffic-signal and street-light installations, and transfer of all individual utility services to underground connections were included in this project, covering 2.7 miles of arterial. Ducts for future undergrounding were installed alongside Roosevelt Way N.E. between N.E. 85th and N.E. 92nd Streets.

The similar **35th Avenue N.E.-Erickson Place N.E.** conversion between N.E. 84th Street and the arterial's junction with Lake City Way N.E,. near N.E. 137th Street, approximately 2.8 miles. Remaining poles north of N.E. 125th Street were to be removed in 1972.

Two additional arterial conversions completed in 1971 except for installation of new street-light standards by the Engineering Department so that poles on which lighting fixtures are presently mounted can be removed are:

The **Meridian Avenue N.** improvement between N. 103rd and N. 112th Streets, which extends an improvement completed earlier between N. 92nd and N. 103rd Streets involving complete redesign and partial relocation of the arterial approach to North Seattle Community College. Besides conversion of overhead wiring and utility services to abutting properties to underground, the improvement includes roadway widening and paving, curb and sidewalk construction, landscaping and tree planting.

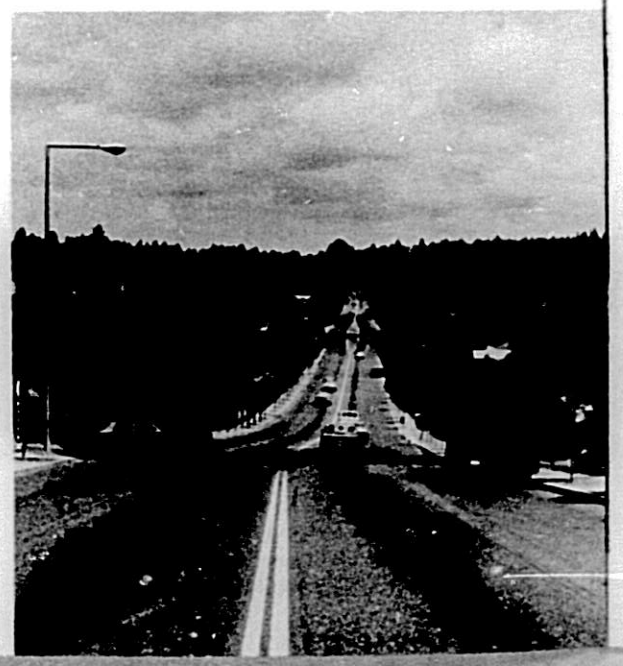
The **15th Avenue N.W.** first-phase conversion, between N.W. 51st and N.W. 58th Streets, which included roadway widening as well as wire undergrounding. At year-end, funding had not been provided for the second phase of this conversion, which would extend it to N.W. 49th and N.W. 65th Streets and along N.W. Market Street between 14th and 17th Avenues N.W.

Although not included among specific goals of Resolution 21340, undergrounding of utility wires along principal arterial streets within the Lighting Department's service area beyond the city limits of Seattle is consistent with those goals to the extent that use of suburban arterials is related to the functioning of the city's system of arterials. The Lighting Department's assent to a Forward Thrust committee request that the Department expend $500,000 annually on wire undergrounding in conjunction with King County arterial improvement projects was conditioned on availability of financing for conversion work.

In 1971, the Lighting Department expended $563,000 on completion of two suburban arterial conversions in collaboration with the County and the telephone company: **Meridian Avenue N.** between N. 145th and N. 163rd Streets; and **5th Avenue N.E.** between N.E. 145th and N.E. 165th Streets. Each project included roadway widening and surfacing, curb and sidewalk construction, and undergrounding of all wired utility services to individual abutting premises (at no cost to owners) and to new street lights and traffic signals.

Lighting Department participation in King County arterial improvement projects proposed for portions of **Des Moines Way S.,** south of the city, and **Bothell Way N.E.** and **15th Avenue N.E.,** north of the city, has had to be deferred until the Department is again able to finance such participation.

Within the city, work is continuing on three arterial underground conversions that are expected to be finished in 1972 and 1973. The most extensive, oldest and costliest of these conversions is that in progress along **N.E. 125th Street** between 37th Avenue N.E. and Roosevelt Way N.E., and along the intersecting portion of Roosevelt Way N.E. between Pinehurst Way N.E. and 5th Avenue N.E.: about 2.3 miles in all. Launched in 1968, this conversion will account for well over $1½ million of Lighting and Engineering Department expeditures, plus those of telephone and CATV companies, by the time it is completed. Street improvements, underground utility duct systems, new street-light standards and a portion of the electrical installations had been completed by the end of 1971.



Fully improved Seattle arterial has all utility lines underground: 35th Avenue N.E., north of N.E. 105th Street.

A less extensive arterial undergrounding project (in that the roadway already has most improvements there is space for) is one that has been in progress since early 1971 along 1.3 mile of **23rd Avenue E. and 23rd Avenue** between E. Helen and E. Cherry Streets. Installations of direct-buried electrical and communications cables in trenches and of underground services to individual premises abutting this Central Seattle arterial progressed during the later months of the year and are scheduled for 1972 completion. Erection of street-light standards, pole removal, and construction of Engineering Department street improvements are scheduled to continue into 1973. Construction techniques employed, the limited space available for street improvements, and the opportunity to supply underground electrical installations from overhead facilities on parallel streets are yielding a relatively low per-mile cost for this conversion.

S.W. Roxbury Street and its northeastward extension down **Olson Place S.W.** from 4th Avenue S.W. to Myers Way S. are the locale of a major Engineering Department arterial improvement project of which only the segment designated "Unit A" was to include complete utility wire undergrounding, as of the end of 1971. By year-end, roadway improvements, underground utility ducts and new street lighting with underground supply had been completed for the Unit A segment of S.W. Roxbury Street, between 24th and 28th Avenues S.W. The Engineering Department has scheduled work on the Olson Place S.W. and S.W. Roxbury Street Unit C (between 28th and 35th Avenues S.W.) improvements, including the under-

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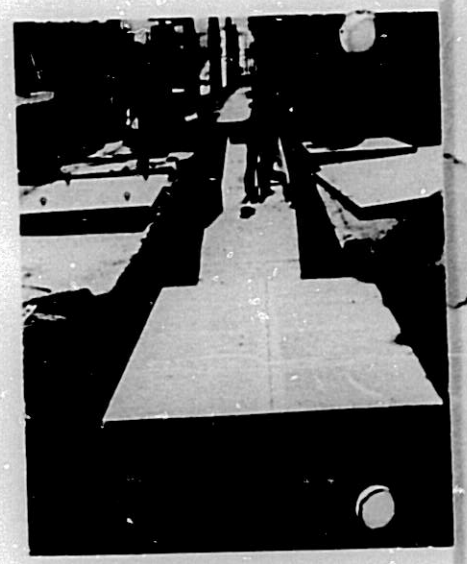
Portions of at least eight other Seattle arterial streets are locales of partial or complete wire undergrounding incidental to the construction of street improvements by the Engineering Department and to area conversions sponsored by utilities and government agencies. Undergrounding of street-light and traffic-signal circuits has been a part of arterial widening and paving projects completed or in progress under Engineering Department auspices along portions of **S. Lander Street, W. Marginal Way S.W., Delridge Way S.W.** and **16th Avenue S.W.** Underground controls have been adopted by the Department as standard for signal installations at all arterial intersections newly added to the city's traffic-control system—a step that will eventually facilitate complete underground conversions along the intersecting arterials.

Funds in support of traffic-signal and street-light wire undergrounding along arterials have come from the federal Traffic Operations Program to Increase Capacity and Safety ("TOPICS"), from the state Urban Arterials Board and highways programs, and from local programs financed by Forward Thrust and general obligation bonds.

Cutting-over of all premises abutting on **Sixth Avenue** and short intersecting streets between Union and James Streets to underground electrical and telephone networks was completed in 1971. The few poles remaining in the area to support street lights were to be eliminated in 1972, following installation of new lamp standards and traffic controls by the Engineering Department.

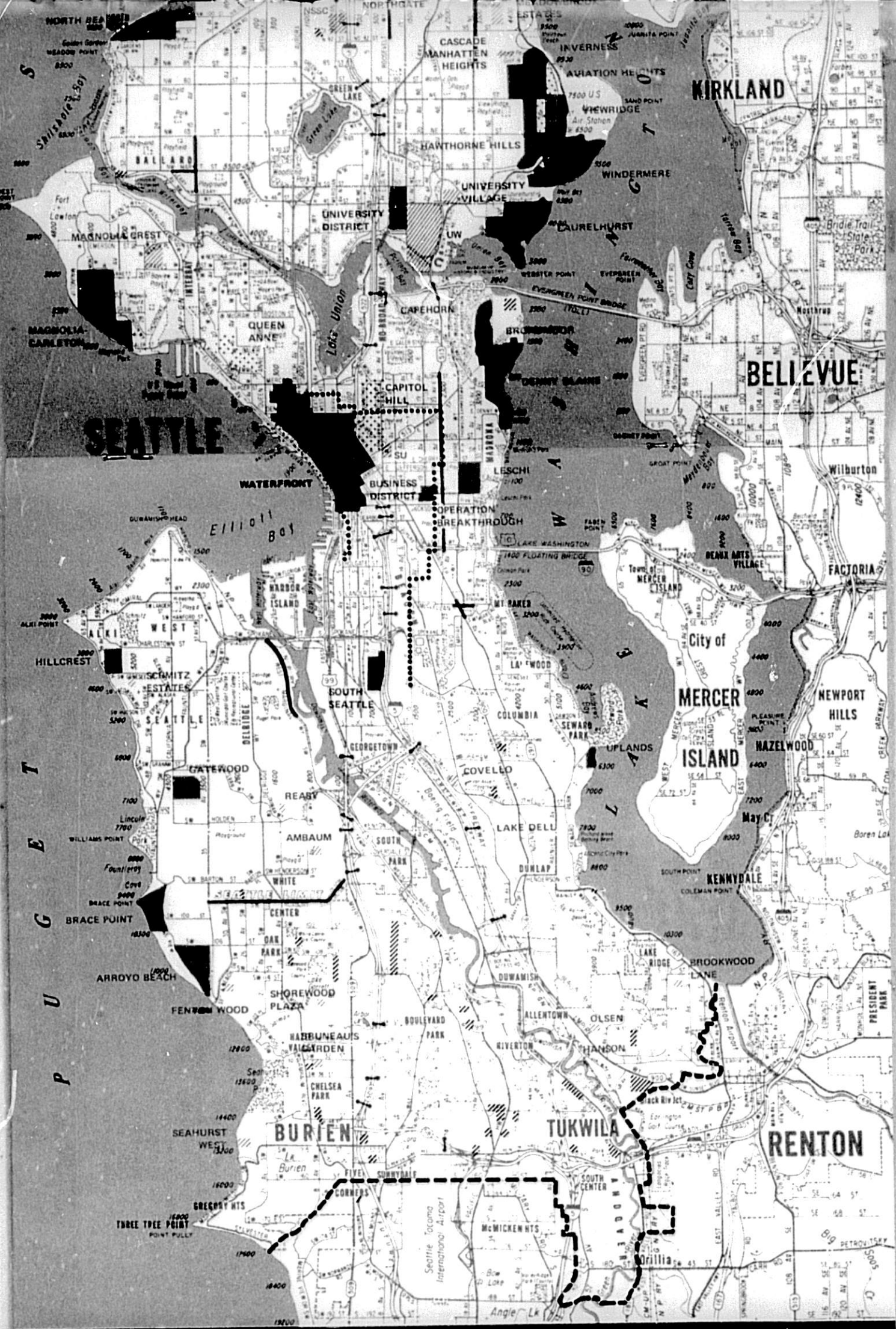
Boren Avenue between Pike and Columbia Streets is an arterial within the Lighting Department's First Hill area conversion project, where cutting-over of all premises to underground telephone and underground network electrical service was in progress in 1971 and continuing into 1972. Short segments of **Denny Way** and **Stewart Street** between the Seattle Freeway and Boren Avenue bound a small triangular area into which underground network electrical distribution was extended in 1971. Completion of electrical installations and conversion of existing services to underground connections so that overhead wires can be eliminated in the area are being postponed, however, until sufficient Lighting Department revenues are available for continuing this work.

"Principal" arterial underground conversions in Seattle deferred because insufficient revenues are available to support the Lighting Department's participation include those proposed for portions of **Rainier Avenue S., Beacon Avenue S.,** and **Aurora Avenue N.** The four blocks between Ward and Galer Streets along the west side of Aurora, however, became the site in 1971 of a "Utiliwalk" trial installation sponsored by the Lighting Department, Pacific Northwest Bell, and the Auburn manufacturer with whom the utilities worked to develop an innovative precast concrete module which combines utility ducts and sidewalk in a single unit permitting easy access to cable installations.



"Utiliwalk" installation beside Aurora Avenue N. houses power and telephone cables separately beneath removable sidewalk sections.

Turf, shrubs, walks and rockeries disturbed during neighborhood conversion to underground utilities will be carefully restored.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AVIATION HEIGHTS
VIEWRIDGE
HAWTHORNE HILLS
WINDERMERE
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UNIVERSITY DISTRICT
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MAGNOLIA CREST
QUEEN ANNE
CAPEHORN
BROADMOOR
DENNY BLAINE
CAPITOL HILL
WATERFRONT
BUSINESS DISTRICT
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BEAUX ARTS VILLAGE
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HILLCREST
SCHMITZ ESTATES
SOUTH SEATTLE
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KENNYDALE
BRACE POINT
ARROYO BEACH
SHOREWOOD PLAZA
BOULEVARD PARK
ALLENTOWN
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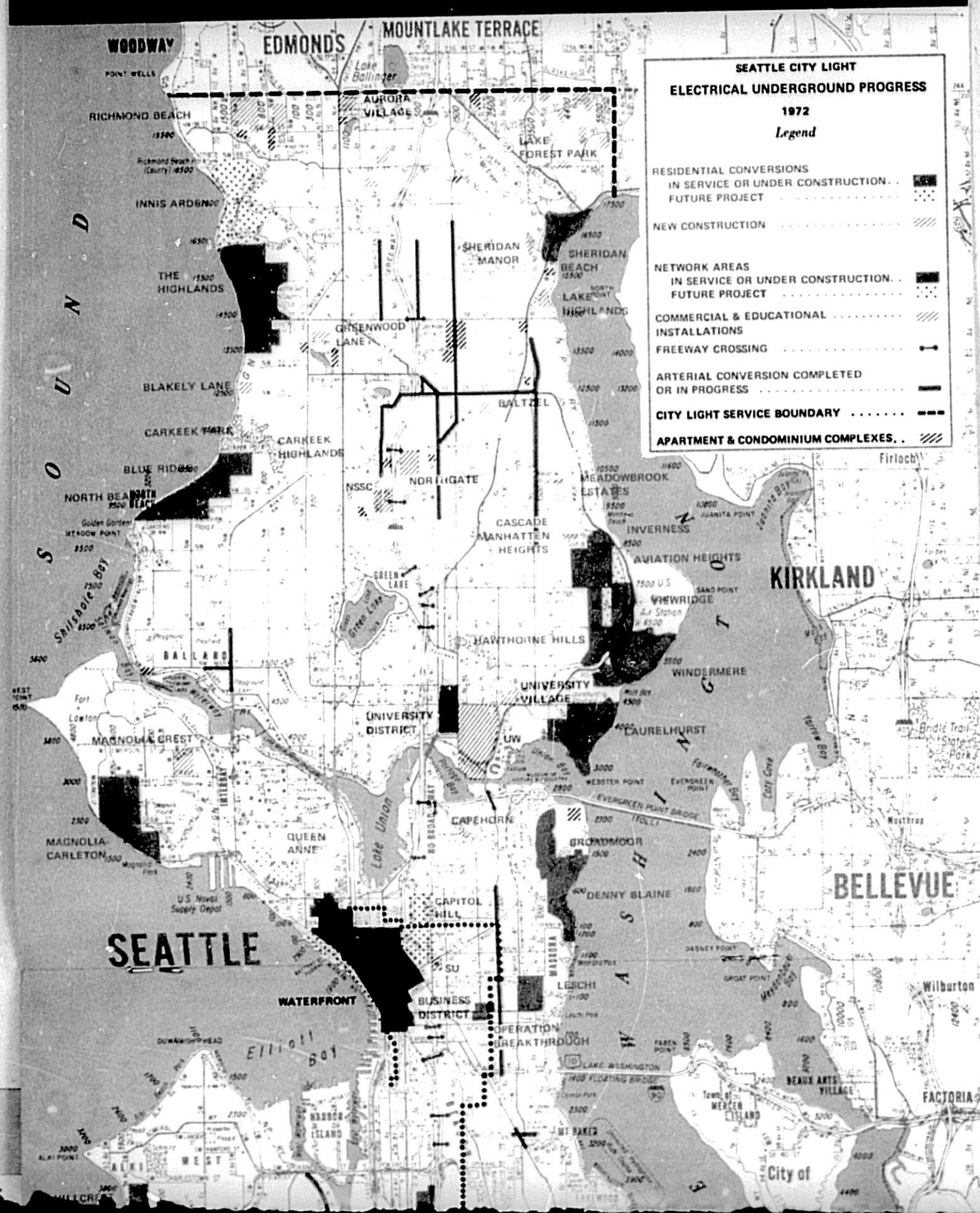
SEATTLE CITY LIGHT
ELECTRICAL UNDERGROUND PROGRESS
1972
Legend
RESIDENTIAL CONVERSIONS
IN SERVICE OR UNDER CONSTRUCTION
FUTURE PROJECT
NEW CONSTRUCTION
NETWORK AREAS
IN SERVICE OR UNDER CONSTRUCTION
FUTURE PROJECT
COMMERCIAL & EDUCATIONAL INSTALLATIONS
FREEWAY CROSSING
ARTERIAL CONVERSION COMPLETED OR IN PROGRESS
CITY LIGHT SERVICE BOUNDARY
APARTMENT & CONDOMINIUM COMPLEXES
WOODWAY
EDMONDS
MOUNTLAKE TERRACE
RICHMOND BEACH
INNIS ARDEN
THE HIGHLANDS
BLAKELY LANE
CARKEEK
BLUE RIDGE
NORTH BEACH
AURORA VILLAGE
LAKE FOREST PARK
SHERIDAN MANOR
SHERIDAN BEACH
LAKE HIGHLANDS
GREENWOOD
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NSSC
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BELLEVUE
KIRKLAND
Wilburton
FACTORIA
City of
Lake Union
Elliott Bay
Shilshole Bay
Lake Washington
Lake Ballinger
Green Lake
Bridle Trail State Park
Fort Lawton
U.S. Naval Supply Depot
Golden Gardens
Meadow Point
Juanita Bay
Yarrow Bay
Fairweather Bay
Meydenbauer Bay
Mercer Island
Beaux Arts Village
Harbor Island
West Seattle
Alki Point
Duwamish Head
Magnolia Park
Richmond Beach Park (County)
Montlake
Montlake Bridge
Evergreen Point Bridge (Toll)
Webster Point
Evergreen Point
Sand Point
Juanita Point
Daisey Point
Goat Point
Fairview Point
Mount Baker
Lake Washington Floating Bridge
Firlochan
Northrop
Point Wells
Freeway
Waterway
Interbay
Ballard
Lake Washington
Puget Sound

NEIGHBORHOOD CONVERSIONS

Cost sharing between utilities and homeowners in Seattle neighborhoods that decided to replace existing overhead utility wiring with underground installations began in the early 1960s. In 1968, the Seattle City Council included language officially sanctioning joint sponsorship of neighborhood underground conversion projects in Section VI of its Resolution 21340:

> The cost of placing overhead facilities underground in public rights of way in neighborhood conversion projects shall be shared with the abutting property owners to a substantial extent by the appropriate utility or agency.

In the past decade, many Seattle neighborhoods and two neighborhoods in suburban areas served by the Municipal Lighting Department have availed themselves of opportunities to secure utility help in financing wire undergrounding.

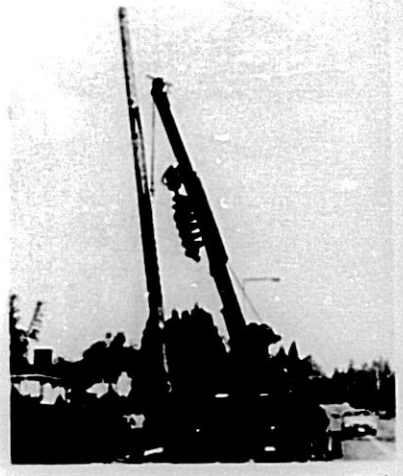
On the other hand, Seattle's Lighting and Engineering Departments have not succeeded in implementing Section IV of Resolution 21340, which was intended to encourage addition of wire undergrounding to residential neighborhood street-paving projects sponsored by local improvement districts (LIDs). Neighborhoods in need of street paving so far have not agreed that the benefits of underground utility wiring warrant an additional investment which some residents of those neighborhoods would find intolerably burdensome. Neighborhoods that are able to undertake wire undergrounding generally either already have paved streets or prefer not to have them.

The assessment formula that evolved for LID sponsorship of residential neighborhood wire undergrounding established a uniform charge of $615 per "buildable" homesite for conversion work and installations in public streets: $415 toward reimbursement of Lighting Department costs, $150 toward reimbursement of Pacific Northwest Bell Telephone Company costs, and $50 for LID administration by the City Engineering Department. In August 1969, Lighting Department reimbursement was increased to $455 and telephone company reimbursement to $175, making the assessment $680 per homesite.

Again in June 1971, to compensate for the effects of inflation on costs and to approach the desired ratio between the contributions of the two utilities and benefited property-owners, the Lighting Department reimbursement was increased to $620 and the telephone company reimbursement to $225, making the total assessment $895 per homesite. Sites on the margins of LID conversion project areas are assessed less, in proportion to benefits received.

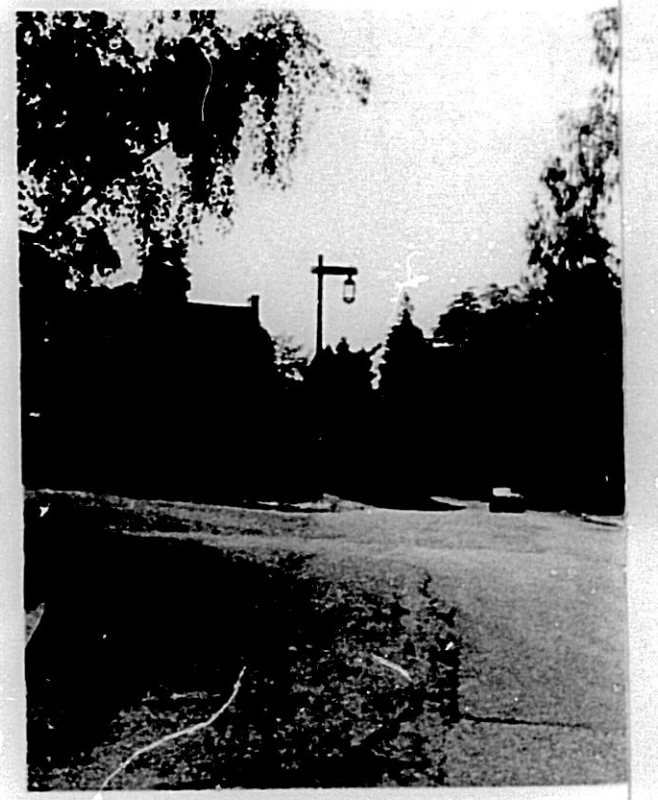
Owners of homesites within LID undergrounding project areas are expected to make their own arrangements with CATV firms to pay for undergrounding of cables not utilized by every household and also to provide installations on private property that will enable all premises to receive utility services from underground instead of overhead facilities. LID conversion projects include mercury-vapor street lighting from uniform standards and underground circuits. When necessary, traffic signals with underground control are also installed.

Before 1969, four Seattle neighborhoods where very large majorities of homesite owners favored and were willing to pay for conversion from overhead to underground utility services were permitted to initiate "voluntary subscription" projects. Largest of such projects were those which converted 1,076 (nearly 97 per cent) of the 1,112 homesites in the Laurelhurst district to underground utility service in 1967-1970. Participants contracted to pay the Lighting Department $915 per homesite for conversion which included work on both public and private property to underground all utility services including street lighting.



Pole removal completes 35th Avenue N.E. arterial conversion.

A residential neighborhood chose laminated wood standards and distinctive fixtures for mercury-vapor street lighting installed as part of conversion to underground utilities. Denny-Blaine No. 1 LID.



LIDs and King County road improvement districts (RIDs) have entirely superseded voluntary subscription since 1970 as the method of sponsoring neighborhood wire undergrounding because LIDs and RIDs offer reasonably equitable means of achieving 100-per-cent conversion within designated boundaries of neighborhood projects. The Inverness conversion, completed in 1963, was the first of 32 LID conversion projects that have been initiated in Seattle by residential neighborhoods. The first RID conversion project, launched in Sheridan Beach in 1969, has been followed by RID projects for two adjoining Sheridan Beach tracts where contract construction was under way in 1971, and by the 550-homesite Innis Arden RID project for which engineering was in progress in 1971.

Within the city, by the end of 1970, Seattle utilities and agencies had completed five neighborhood underground conversions sponsored by voluntary subscriptions,. totaling 1,152 homesites; and six LID conversions totaling 836 homesites. During 1971, another six LID conversion projects, comprising 787 homesites, were completed, including three projects (Gatewood Hill, Endolyne and Denny-Blaine No. 1) where the last poles were not taken out until after the beginning of 1972.

Under construction in 1971 and scheduled for completion in 1972 were the 500-homesite Blue Ridge LID project (where poles were already coming out at year-end 1971); five Magnolia district LID projects totaling 7
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Under construction in 1971 and scheduled for completion in 1972 were the 500-homesite Blue Ridge LID project (where poles were already coming out at year-end 1971); five Magnolia district LID projects totaling 507 homesites; the three Sheridan Beach RID projects mentioned above, comprising 213 homesites north of the city, near Lake Washington; and the 330-homesite Northwest Leschi NDP conversion sponsored in large part by a federal agency.

Thus, in the ten years 1963-1972, 27 neighborhood underground conversion projects will have been completed in and near Seattle, eliminating overhead wires and utility poles from the marine and mountain views of some 4,325 homes and improving the appearance of the streets on which they are situated.

Engineering and the preparation of plans and specifications were in progress (and in some instances completed) during 1971 for 14 additional neighborhood LID undergrounding projects in Seattle, totaling 1,953 homesites, and for the 550-site Innis Arden RID project outside the city. Barring legal and other complications which could delay progress of some projects, these conversions affecting 2,503 homesites should be essentialy completed by the end of 1973.

Petitions instituting the latest 15 projects were all filed before the standard assessment for conversion work in public rights of way was upped from $680 to $895 per "buildable" homesite. Whether or not the higher assessment will turn out to be prohibitive for new projects, it is clear that many neighborhoods hastened to get their undergrounding projects authorized under the old rate in 1971.

OTHER CONVERSIONS

Elimination of existing utility poles and overhead wiring by substituting underground facilities implements specific provisions of Seattle City Council Resolution 21340 only when the eliminated installations are "along principal arterials and scenic points," in "neighborhood conversion projects," or in "high load density areas." The foregoing sections of this report have dealt with utility-sponsored arterial conversions and with area conversions proposed and co-sponsored by residential neighborhoods. Area conversion projects sponsored by utilities and government agencies for reasons of environmental esthetics or high load density remain to be discussed.

Although there have been isolated instances of wire undergrounding in Seattle to relieve localized overloading of overhead system facilities, generally it is the **appearance** of congested overhead installations which has prompted undergrounding in neighborhoods where a relatively high concentration of utility service requirements has developed. Established shopping, apartment-house and hospital neighborhoods outside the city's central business district have been selected for the area underground conversion projects sponsored by utilities. Government agencies have interested themselves primarily in area redevelopment projects where utility-wire undergrounding feasibly upgrades the complete reconstruction necessary to change the use and nature of project areas.

Seattle's First Hill district, where hospital, clinic and apartment buildings are concentrated, exemplifies utility-sponsored area undergrounding in that the Lighting Department and Pacific Northwest Bell Telephone have provided underground electrical network and telephone installations in the streets (with help from the Engineering Department in providing new street lighting and traffic signals), leaving only the cost of conversion work on private prop-

Hydraulic jack expedites pole removal.

erty to be paid by owners of benefited premises. Contract work on the First Hill conversion was completed in 1971 with the installation of cables and transformers in new ducts and vaults, and the energizing of new street lighting. At year-end, transfer of individual utility services to underground connections was still under way, on a schedule that should permit removal of overhead apparatus to begin and possibly to be completed in 1972.

The $2 million First Hill conversion takes in about 33 blocks of an area immediately east of the Seattle Freeway, bounded by the Freeway, Minor Avenue, and Pine and Columbia Streets. Among utility-sponsored conversions it ranks second only to the similar project completed in 1968 for 50 blocks of the commercial center of Seattle's outlying University district.

The decision not to authorize a sufficient rate increase to finance the Lighting Department's share of the cost of another large commercial-area conversion planned for a portion of the Capitol Hill district bounded by Broadway, the Seattle Freeway and East Roy and East John Streets has caused Phase II of this proposed conversion to be deferred indefinitely. Phase I of the project, the partial undergrounding of an apartment-house neighborhood bounded by Melrose and Bellevue Avenues E. between E. John and E. Roy Streets, was completed in 1971 with the cutting-over of services to underground facilities constructed in 1969 and 1970.

Design of a proposed park and commercial redevelopment for downtown Seattle's Elliott Bay waterfront by the municipal Department of Community Development had not progressed sufficiently to permit final engineering and construction of improvements to begin in 1971. Anticipating that the waterfront development plan eventually adopted will require utility wire undergrounding, the Lighting Department in 1968 constructed underground vaults and ducts at the southern end of the project area, near the foot of S. Jackson Street.

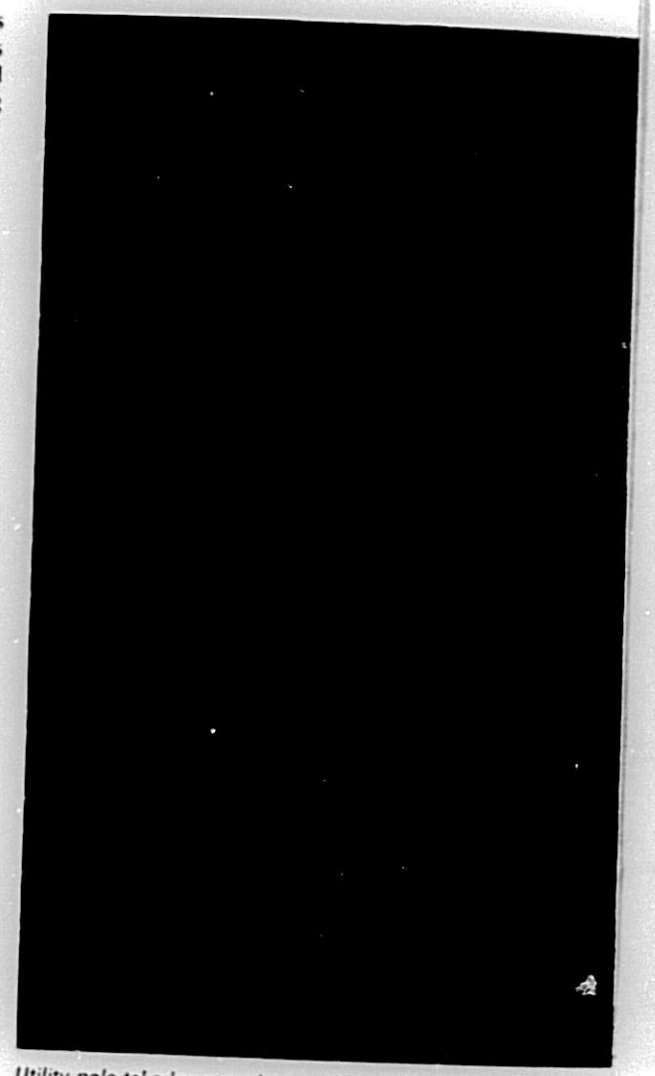
AGENCY-SPONSORED CONVERSIONS

The federal Department of Housing and Urban Development's Neighborhood Development Program (NDP) is sponsoring wire undergrounding, including utility services to all premises and upgrading of street lighting, in a 22-block older residential district in East Central Seattle bounded by Empire Way, 32nd Avenue, Cherry Street and Yesler Way. Known as the "Northwest Leschi NDP" project, this improvement is the first of its kind in Seattle to receive federal funding (about 88 per cent of the estimated $792,000 cost, the remainder being financed by the Lighting Department). Construction began in 1971 and is scheduled for completion in 1972.

Unlike the Northwest Leschi NDP conversion, the federally funded Urban Renewal and Model City redevelopment projects in Seattle involve commercial or mixed commercial and residential neighborhoods. The first of these to be completed was an Urban Renewal project which converted an old South Seattle neighborhood of stores and houses into a park-like center for businesses and light industry. Underground electrical distribution, street lighting and telephone circuits were installed to serve the whole tract in 1969; however, at the end of 1971 a few poles remained in the area which could not be removed unitl the firms they served completed conversion work on their own permises.

Underground conversion including upgraded street lighting is among improvements undertaken late in 1971 in the "Operation Breakthrough" portion of the Yesler-Atlantic Urban Renewal project. "Operation Breakthrough" is essentially a community services center and multiple housing development in a blighted commercial/residential sector bounded by 17th and 20th Avenues S. and by Yesler Way and S. Main Street. The federally-funded project, administered locally by Model City and Seattle Department of Community Development offices, is scheduled for 1972 completion.

Wire undergrounding and street lighting improvements are expected to be included in the larger Yesler-Atlantic Neighborhood Improvement project for which funding is being sought. The 134-acre Yesler-Atlantic project site is bounded by Yesler Way, S. Jackson Street and 14th and 24th Avenues S. "Unity '71", a smaller Model City redevelopment project involving the area bounded by Yesler Way, E. Fir Street and 18th and 20th Avenues, also calls for wire undergrounding. This project was launched in 1971 and scheduled for 1972 completion.



Utility pole takedown marks completion of Denny-Blaine No. 1 LID residential neighborhood underground conversion.

NEW CONSTRUCTION

The mandatory language of Section V of Resolution 21340, requiring underground utilities for all new construction, has been taken to apply primarily to agencies and areas subject to the authority of the Seattle City Council; hence, to Lighting Department installations within Seattle's city limits. The phrase "insofar as practicable" seemingly further restricts applicability of this section to locations where sponsors of new construction determine that prospective benefits render additional outlays for underground utilities economically practicable.

As a group, sponsors of new construction within the city have been more willing than suburban builders to elect to "go underground". Furthermore, construction sites where only underground utility services are available, and new structures with electric service requirements so large as to necessitate an underground service vault on the premises, are more commonly encountered within than outside the city.

Of the 1,867 applications for electric service to new residential premises, both inside and outside the city, processed by the Lighting Department in 1971, 1,270 (68 per cent) requested underground service. Of the 257 applications for service to new commercial premises processed, 130 (50.6 per cent) requested underground service. During the four years 1968 through 1971, 14,345 (78 per cent) of the 18,400 residential service applications processed and 631 (38.6 per cent) of the 1,635 commercial service applications processed by the Department requested underground electric service.

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In the Lighting Department's entire service territory, 99 new multi-family housing structures containing 3,954 dwelling units were constructed with underground utilities in 1971. Seventy-four new single-family residences with underground utilities were also constructed in this area in 1971, most of them in tract developments ranging from three to 14 homesites. (Not all of this new housing was occupied by the end of the year.)

In areas served by predominantly overhead facilities, the Lighting Department completed underground installations in 1971 to serve 26 new industrial and commercial buildings, 13 new schools and churches, seven new hospital structures and additions, and 11 new public buildings.

Decisions by utilities for environmental reasons to construct new underground facilities of their own, in place of more economical overhead alternatives, carry out the mandate of Resolution 21340, Section V, and obviate the need for later conversions. An instance is the Lighting Department's installation, energized in 1971, of three pipe-type underground 115,000-volt transmission circuits linking its Massachusetts Street and Broad Street receiving substations on opposite sides of Seattle's central business district.

Of three additional 115,000-volt transmission circuits designed in 1971 for 1972-1973 installation to supply the Lighting Department's new Union Street substation (near the downtown waterfront) from Massachusetts Street, one will be in pressurized underground pipe its full length. The other two will be partly underground and partly open cable supported inconspicuously beneath the lower roadway of the Alaskan Way viaduct. At Union Street, the compact, low-profile substation designed in 1971 for construction by 1973 will display no outdoor lines or apparatus.

The Lighting Department and telephone company have installed underground ducts along several Seattle streets to carry wiring that would otherwise have necessitated additional overhead construction. Ducted lines along portions of W. Crockett Street (between Fourth and Ninth Avenues W.), Sand Point Way N.E. (between N.E. 70th and N.E. 75th Streets), and 24th Avenue N.W. (between N.W. 87th and N.W. 95th Streets) will eventually facilitate complete neighborhood conversions to underground utility wiring.

Ducts and manholes needed for the planned future conversion of several city blocks immediately south of Denny Way, between First Avenue and the Seattle Freeway, were all installed by 1970. Aerial utility wire crossings of the Freeway have been progressively eliminated inside Seattle since 1960 by underground and under-bridge installations (see map, pages 6 and 7). The last of these concealed Freeway crossings was completed at S. Norfolk Street, near the south city limit, by the Lighting Department in 1971.

Utility lines crossing newly constructed highways are being concealed in bridge structures when they are built. This past year, the necessary conduits were included in a bridge crossing the new secondary north-south highway through Burien, SR-509, at S. 152nd Street. Similar provisions to conceal wires crossing the new Renton - Burien highway, SR-518, in bridges were completed earlier.

wn marks completion of LID residential neighborhood ersion.

SUMMARY & FORECAST

Following completion of arterial and area conversions from existing overhead to new underground wiring, the Lighting Department in 1971 took down 410 utility poles and 81.8 miles of overhead electrical wire. Additional wire was removed by telephone and CATV companies participating in conversion projects. The number of conversions in progress or scheduled for early construction at year-end promised a continuing high rate of overhead facility takedowns for 1972 and 1973.

Since wire and pole removal is the last of a series of operations may extend over many months, the quantity of wire and poles eliminated in consequence of completed conversions was relatively small when many projects were just getting started. Conversely, the pace of overhead facility elimination can be expected to increase with the simultaneous approach to completion of a number of conversion projects, even though the total amount of undergrounding work in progress remains the same or tapers off.

As a measure of the total undergrounding effort (of which wire and pole takedowns are the goal and dramatic "payoff"), expenditures of the utilities and agencies cooperating in the effort will have more validity, then, than quantities of wire and poles taken down. It happens that, among utilities and agencies involved in undergrounding activities in Seattle, only the municipal Lighting Department reports actual expenditures relating to these activities. However, since Lighting Department expenditures constitute easily the largest single contribution to the total community undergrounding effort, these expenditures and the manner in which they are allocated may be taken as indicative of the progress of the various undergrounding programs.

Undergrounding program expenditures of the Lighting Department totaled $8,611,000 in 1968, $8,934,000 in 1969, $7,469,000 in 1970, and $8,578,000 in 1971: $33,592,000 altogether, amounting to 15.8 per cent of the Department's gross revenues for those four years. Some $1,978,000 of these expenditures is returnable to the Department from contributions of owners of properties benefited by certain projects.

The $1,968,000 Department expenditure on residential neighborhood conversion projects and $1,692,000 expenditure on underground transmission lines in 1971 both were significantly greater than comparable outlays in the three preceding years. The $566,000 expended on commercial-area conversions in 1971 was minor compared to the $6,920,000 total expenditure on these conversions recorded in 1968-1970.

Department expenditures on conversions along "principal" arterial streets, which reached a maximum for one year of $1,493,000 in 1970, dropped to $1,270,000 in 1971 and totaled $4,253,000 for the four years. The Department recorded no expenditures in 1971 relating to the waterfront and Urban Renewal underground conversion projects.

Reflecting the effect on Lighting Department revenue projections of the 1971 decision to authorize a seven per cent overall electric rate increase in place of the requested 11 per cent increase, the Department's 1972-1981 capital improvements program forecasts expenditures of $7,049,000 in 1972, $3,679,000 in 1973, $6,221,000 in 1974 and $5,400,000 in 1975 on capital projects involving wire undergrounding. The Engineering Department's capital construction forecast projects 1972 expenditures totaling $382,000 and 1973 expenditures totaling $140,000 for wire undergrounding related to arterial improvements on which that Department will spend an additional $1,360,000 in 1972.

Among underground construction expenditures projected for 1972, the Lighting Department lists $1,980,000 for residential neighborhood LID and RID conversions, $443,000 for commercial area conversions; $1,024,000 for transmission lines; $641,000 for installations to serve new commercial construction; $325,000 for continued work on arterial conversions; $563,000 for the Northwest Leschi NDP and Northlake Urban Renewal conversions; and $1,530,000 for underground network improvements.

It is clear from these allocations that Lighting Department participation in future undergrounding of utility wires along principal arterials has been drastically scaled down. This was the effect of matching projected outlays for authorized undergrounding projects and programs against funds prospectively available from Department revenues for investment in these projects and programs.

However, arterial conversions to underground wiring were central to the legislative intent expressed in Resolution 21340, which assumed that the Lighting Department could continue financing these conversions at the rate of $3,000,000 annually and proposed that conversions along all the city's principal arterials be completed within 25 years. If this important program is to reach and maintain the intended rate of progress, additional financial resources must be put behind it. We therefore earnestly recommend that the community commit its best efforts to securing, from federal and/or local sources, the funds needed to achieve the desired rate of progress in arterial undergrounding.

Respectfully submitted,
THE BOARD OF
PUBLIC WORKS OF THE
CITY OF SEATTLE

The Municipality of Metropolitan Seattle's West Point sewage-treatment facility exemplifies new construction with underground utility services.

Locally developed "Utiliv of utilities in distant c

Completed arterial underground conversion: Pineh looking from Roosevelt Way N.E. toward 15t

Locally developed "Utiliwalk" concept attracted attention of utilities in distant cities. (Another photo: page 5.)

Completed arterial underground conversion: Pinehurst Way N.E., looking from Roosevelt Way N.E. toward 15th Avenue N.E.

Puget Sound view from a Gatewood Hill street in West Seattle before and after completion of LID underground conversion.

CITY OF SEATTLE
DEPARTMENT
OF LIGHTING
CITY LIGHT BUILDING • 1015 THIRD AVENUE • SEATTLE, WASHINGTON 98104 • Telephone MAin 3-7600

JOHN M. NELSON, Superintendent
MEMBER, BOARD OF PUBLIC WORKS

April 13, 1970

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INFORMATION
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SEATTLE ENG DEPT
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To the City Council
of the City of Seattle
1100 Municipal Building
Seattle, Washington 98104

Re: Annual Underground Wiring Report
1969

Honorable Members:

The Seattle Engineering and Lighting Departments are pleased to submit to you, on behalf of the municipal Board of Public Works, the enclosed joint report on the underground wiring accomplishments of the past year required by Section VIII of City Council Resolution No. 21340.

A version of the same report for general distribution, in booklet form, including additional illustrative material, is in preparation. We hope to have this publication ready within three or four weeks.

Additional copies of the enclosed report can be furnished on request, in the meantime.

Yours very truly,

(Sgd.) John M. Nelson

JOHN M. NELSON
Superintendent of Lighting

CF 266554

JMN:mjg

Enc.

cc: Mr. Roy W. Morse, City Engineer
Board of Public Works

Tissue Copy (Cover ltr only) Ltr Ltg 9-19

SEATTLE CITY LIGHT

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UNDERGROUND WIRING REPORT

Issued March 31, 1970 in accordance with
Seattle City Council Resolution 21340, Section VIII
by The City of Seattle, Board of Public Works

Introduction

The City of Seattle's policy to promote the construction of electric utility, street lighting, traffic-control system and communications circuits underground rather than overhead is being implemented primarily through eight distinguishable programs. Four of these programs involve conversion from serviceable existing overhead facilities to new underground facilities, with removal of overhead facilities following transfer of service to underground circuits. The four conversion programs consist of:

A. Projects to replace overhead with underground electrical distribution and other utility services in residential neighborhoods, co-sponsored by the utilities with owners of directly benefited properties.

B. Projects to replace overhead with underground electrical distribution and other utility services in built-up commercial districts, sponsored by the utilities and agencies serving these districts.

C. Projects to replace overhead with underground electrical distribution, street lighting, traffic-control system, telephone and community antenna television circuits along principal arterial streets of the Lighting Department service area, inside and outside corporate Seattle, sponsored entirely by the utilities and agencies as to work on both public and private property.

D. A project to replace overhead with underground electrical distribution, street lighting, traffic-control system and telephone circuits along the downtown portion of Seattle's Elliott Bay waterfront, sponsored entirely by utilities and agencies which own the existing overhead facilities.

Two programs call for installation of underground instead of overhead electric service to new construction in areas of the Lighting Department's service territory where the normal or surrounding distribution is by overhead facilities. These programs consist of:

A. Provision of underground electric service from nearby existing overhead distribution circuits to new residential tract developments, new residences, new apartment and multi-family housing developments, new commercial and industrial buildings, new shopping centers, new schools and institutional structures. Where the cost differential for underground service is not assumed entirely by the Lighting Department, builders and developers retain the option of accepting overhead service instead of contributing part of the additional cost for underground service.

B. Provision of underground electric distribution, street lighting, traffic-control system, telephone and CATV circuits in federally designated Urban Renewal areas, nearly all of which are located in overhead service districts. Federal Urban Renewal funds and Lighting Department revenues will each finance approximately half of the costs of constructing the underground electrical distribution systems in the designated areas. Undergrounding of street lighting and traffic control system circuits is expected to be financed in part with federal, in part with arterial street-improvement funds.

Finally, two programs consist of projects that enlarge, strengthen or otherwise improve underground transmission and distribution facilities of the Lighting Department's electric system:

A. Construction of underground pipe-type 115,000-volt transmission lines interconnecting the new Massachusetts Street Substation, the projected Union Street Substation, and the existing Broad Street Substation, and connecting the new University Substation with the existing North Substation to meet load increases generated by new construction in the city's central business and University districts.

B. Construction of ductwork, feeders and connections enabling new and proposed major substations to serve underground network area loads; extension of underground networks into areas peripheral to the downtown business district that have hitherto been served by overhead distribution; and undergrounding of distribution lines in the vicinity of two South End limited access highways, SR- 509 and SR-518, which have not yet been constructed.

In addition to the City of Seattle Lighting and Engineering Departments, the companies and agencies which have been coordinating undergrounding of their own facilities with the City's undergrounding programs include: Pacific Northwest Bell Telephone Company; several franchised television cable services; and the King County Department of Public Works (formerly the King County Engineer), which is responsible for the undergrounding projects in Seattle City Light's service territory outside the corporate limits of Seattle, sponsored by county road improvement districts.

In connection with the principal arterials undergrounding program, the Seattle Engineering Department has retained a separate responsibility for traffic control system and street light wiring, along with its general responsibility for street and sewer improvements. The Engineering Department therefore has included traffic control and street lighting funds allocations in its portion of the City's Capital Improvement Program relating to some of the same arterial undergrounding projects for which the Lighting Department has set aside distribution-system conversion funds in its own portion of the Capital Improvement Program. The respective contributions of both Departments to the various arterial undergrounding projects are reported on the following pages.

ANTICIPATED vs. ACTUAL UNDERGROUND WIRING EXPENDITURES, 1969

(thousands of dollars)

	Engineering Department		Lighting Department		Total	
	Anticipated	Actual	Anticipated	Actual	Anticipated	Actual
Residential Neighborhood Conversions	----	----	1,300	1,217*	1,300	1,217*
Commercial District Conversions	101	101	1,200	2,148	1,301	2,249
Underground to New Construction	----	----	1,000	1,535	1,000	1,535
Urban Renewal Area Undergrounding	38	36	507	577	545	613
Underground Transmission Construction	----	----	611	11	611	11
Downtown Underground Network Improvements	139	144	2,600	2,222	2,739	2,366
Waterfront Underground Conversion	200	0	900	84	1,100	84
Principal Arterials Undergrounding Program:						
Inside City of Seattle	698	402	2,500	1,140	3,198	1,542
Outside City of Seattle	----	----	500	0	500	0
	1,176	683	11,118	8,934*	12,294	9,617*

*Includes amounts billed and contributions in aid of construction, $602,000

1969 UNDERGROUND WIRING REPORT

PART I: CONVERSION PROGRAMS

A. RESIDENTIAL NEIGHBORHOOD UNDERGROUNDING PROJECTS

1. Projects completed in 1969

Seattle City Light completed installation of underground electric distribution systems and underground electric services to individual homesites in three residential neighborhoods in 1969. The three projects, all sponsored by local improvement districts through action of owners of benefited properties, included a total of 447 homesites. City Light expenditures related to these three projects totaled $485,000 in 1969. The three completed LID neighborhood conversion projects were:

--- View Ridge No. 1, consisting of 258 homesites. City Light's investment in this project to the end of 1969 totaled $435,000, of which $326,000 was expended in 1969 and $109,000 in prior years. Outstanding commitments are expected to bring the total cost of this project to $490,000.

--- The Magnolia-Carleton conversion, involving 157 homesites. City Light's investment in this project to the end of 1969 totaled $255,000, of which $131,000 was expended in 1969 and $124,000 in prior years. Outstanding commitments are expected to bring the total project cost to $280,000.

--- The Northeast 42nd Street conversion, consisting of 32 homesites. City Light invested $1,000 in this project in 1968 and $28,000 in 1969. With outstanding commitments, total cost of the project is expected to come to $35,000.

2. Uncompleted projects under construction in 1969

West Laurelhurst, a 653-homesite neighborhood conversion-to-underground project partly financed by contracts between City Light and individual lot-owners on a voluntary basis instead of through formation of a local improvement district, accounted for expenditures totaling $592,000 in 1969 which (added to the $82,000 expended on the project in 1968) brought the total investment at year-end 1969 to $674,000. Expenditures and commitments totaling $326,000 in 1970 are expected to bring the cost of this conversion to $1,000,000 when it is completed late in 1970. West Laurelhurst is the last of three Laurelhurst conversion projects totaling 1,106 homesites.

View Ridge No. 2 LID, with 159 homesites, moved intothe construction stage with award of a construction contract near the end of 1969 and is also scheduled to be completed in 1970. City Light expended $3,000 in 1968 and $10,000 in 1969 on pre-construction work related to this conversion, and plans to expend and commit $229,000 more to complete the project, which has an estimated total cost of $242,000.

3. Active projects in pre-construction phase

Local improvement districts have been formed (or were in the process of being formed in 1969) for the purpose of converting 22 Seattle neighborhoods from overhead to underground utility service, and one road improvement district was organized for the same purpose in suburban King County. Boundaries of 20 of these proposed projects had been definitely established. City Light engineers prepared preliminary plans for 16 of the projects for submission to the Board of Public Works. The Seattle City Council created 12 undergrounding improvement districts by resolution in 1969. Petitions for LID formation were signed by a majority of property owners in seven neighborhoods during 1969, and at year-end petitions were being circulated in seven other neighborhoods.

Three of the proposed undergrounding LIDs had progressed sufficiently toward actual construction in 1969 to have had financing for them included in the Lighting Department's 1970-1981 Capital Improvement Program. These projects were:

--- North Beach LID, with 185 homesites. City Light substantially completed engineering of the project in 1969 and scheduled advertising for bids on the construction contract for January 14, 1970. Expenditures on the project -- $3,000 in 1968 and $14,000 in 1969 -- are forecast as $106,000 in 1970 and a project total of $263,000 by the time the conversion is completed in 1971.

--- Blue Ridge LID, with 430 homesites. Established by resolution after a public hearing, this conversion was almost completely planned by the end of 1969 and construction specifications were being developed. City Light expenditures of $16,000 on the project in 1969 were projected as mounting to $289,000 in 1970 and as totaling $601,000 when the conversion is completed in 1972.

--- S. W. Brace Point Drive, et al. (Endolyne) LID, with 149 homesites. Construction specifications for this conversion were nearly complete at the end of 1969, but there had been delays in acquiring the necessary easements. City Light expenditures on the project, $1,000 in 1968 and $14,000 in 1969, were scheduled as $71,000 in 1970 and a total of $223,000 when the conversion is completed in 1971.

Pre-construction expenditures related to four additional neighborhood conversion LIDs were recorded by City Light in 1969:

--- Hawthorne Hills LID, 200 homesites, for which preparation of final plans and construction specifications was nearing completion at the end of 1969, following a public hearing and passage of a resolution authorizing the project. Expenditures totaling $6,000 in 1969 and projected as totaling $110,000 in 1970 are geared to completing the conversion at a total cost of $246,000 in 1971.

--- Madrona Place East LID (or Denny-Blaine No. 1 LID), comprising 97 homesites, had passed the boundary-definition and petitioning stages, by the end of 1969, but the public hearing had not been held and construction specifications remained to be developed. Of the estimated $130,000 total cost of this conversion, scheduled for 1971 completion, City Light expended $8,000 in 1969 and planned to expend $83,000 in 1970.

--- Northeast Crown Place LID, comprising 200 Sand Point Country Club homesites, had been authorized by resolution and was scheduled for a public hearing in February 1970. Of the estimated $232,000 total cost of this conversion, scheduled for completion in 1971, City Light expended $5,000 in 1969 and plans to spend $2,000 in 1970.

--- Magnolia No. 2 LID, with 254 homesites, had been defined as to boundaries and was in the preliminary planning stage as 1969 ended. The estimated ultimate cost and completion date of this conversion had not been determined at year-end. City Light's expenditures were $3,000 and commitments $20,000 in connection with this conversion in 1969, with $72,000 of expenditures programmed for 1970.

Residential underground conversion LIDs on which, as a group, City Light expended $64,000 in 1969 (but which were not sufficiently advanced in processing to have accumulated substantial costs individually) included the following:

--- Northeast 88th Street LID, with 16 homesites, delayed pending scheduling of a public hearing on a required street vacation. Boundaries of the project have been determined and preliminary planning completed.

--- Sheridan Beach-Sheridan Heights RID, with 165 homesites, was formed in suburban King County (outside corporate Seattle but within City Light's service territory) and approved following a public hearing. Preliminary planning for this conversion project was under way at the end of 1969.

--- Denny-Blaine No. 2 LID, comprising 60 homesites, was still in the boundary-delineation and pre-planning stage at the end of 1969.

--- Gatewood Hill LID, comprising 182 homesites and authorized by resolution, was in the boundary-delineation and pre-planning stage at the end of 1969.

--- Magnolia No. 3 (108 homesites) and No. 4 (52 homesites) LIDs had been authorized by resolution and were being planned at the end of 1969.

--- Magnolia No. 5 (150 homesites) and No. 6 (approximately 50 homesites) were proposed LIDs not yet authorized by resolution but pre-planned in 1969.

--- Arroyo Beach Place S. W. LID, with 150 homesites, was authorized by resolution on the basis of boundaries established in 1969 and was being planned at year-end.

--- Wedgewood LID, consisting of approximately 200 homesites, was being preplanned at the end of 1969 but boundaries of the proposed project had not been finally determined and the authorizing resolution had not been passed.

For the six proposed neighborhood undergrounding LIDs listed below, project boundaries had been defined, petitions had been or were being circulated, and preplanning was in progress at the end of 1969. Public hearings and authorizing resolutions remained to be completed for these conversions:

--- Golden View LID, comprising about 100 homesites.
--- Queen Anne LID, comprising about 120 homesites.
--- North Broadway LID, comprising an estimated 370 homesites.
--- Leschi LID, approximately 26 homesites.
--- Meadowbrook (35th Avenue N. E.) LID, consisting of about 45 homesites.
--- N. E. Brockman Place (15th Avenue N. E.) LID, about 50 homesites.

Summary

During 1969, Seattle City Light completed construction of three LID-sponsored residential neighborhood underground conversion projects totaling 447 homesites. City Light's expenditures on the three projects for the year totaled $485,000.

Active but uncompleted residential neighborhood underground conversion projects, including one in which individual lot-owners participated on a voluntary basis, without forming an LID, accounted for $732,000 of City Light expenditures during 1969 and involved approximately 4,171 homesites.

Together, completed and active but uncompleted neighborhood underground conversion projects accounted for $1,217,000 of City Light's 1969 expenditures and involved 4,618 homesites.

B. COMMERCIAL DISTRICT CONVERSIONS

Construction contracts were awarded in 1969 to accomplish the conversion of electrical distribution, street lighting, telephone, community-antenna television and traffic control system circuits from overhead to underground installations in two of Seattle's established commercial districts, First Hill and Capitol Hill.

1. First Hill

The First Hill conversion covers approximately 33 blocks in an area bounded by the Seattle Freeway, Columbia Street, Minor Avenue and Pine Street. By the end of 1969, the contractor had completed construction of ducts, manholes and vaults for the underground installations, and street-light standards had been erected ready to be energized as soon as the necessary circuits were in place. The engineering of electrical installations was nearly completed by the end of 1969. Installing of electrical equipment was scheduled to begin at the end of the year and to be completed by October 1971. Transfer of the first customer loads from overhead to underground actually began north of Union Street at the beginning of 1970.

Lighting Department expenditures on the First Hill conversion in 1969, $967,000, added to Engineering Department expenditures for street lighting and traffic control system installations during the year, $101,000, brought the total expended on the project in 1969 to $1,068,000. The ultimate total cost of the project is estimated at $1,812,000. Expenditures and commitments of the Lighting and Engineering Departments accumulated to the end of 1969 totaled $1,714,000. In 1970, the Lighting Department planned to spend $109,000 and the Engineering Department $50,000 on the project.

2. Capitol Hill, Phase I

The eventual conversion of utility, traffic control and communications circuitry from overhead to underground installations in the commercially developed portion of Capitol Hill bounded by East Pike and East Roy Streets, the Seattle Freeway and Broadway, will be accomplished in two segments. The smaller segment, designated Phase I conversion, was undertaken by Seattle City Light in 1969 in an area of large apartment buildings bounded by East John and East Roy Streets and Melrose and Bellevue Avenues East.

Phase I construction supplements the overloaded existing overhead distribution in this neighborhood with an underground system which, at this stage, will not serve every address and will not include telephone and CATV lines. By meeting requirements of sizable new electric loads without adding visually unacceptable overhead installations, Phase I construction contributes substantially toward the eventual complete undergrounding of a larger area that will be accomplished by the Phase II program.

Contract vault and manhole construction and conduit installation for the Phase I conversion was scheduled for completion December 29, 1969, but not completed on schedule. Electrical equipment installations were to follow as soon as the contract construction work was finished. Seattle City Light expenditures on the Phase I conversion totaled $51,000 in 1969, plus commitments that will carry over into 1970. Projected expenditures for the first three quarters of 1970 total $203,000. Estimated total cost of the Phase I conversion, scheduled to be completed during the third quarter of 1970, is $350,000.

3. Miscellaneous Commercial-Area Conversions

The continuing program for converting established commercial districts to underground wiring also includes the undergrounding of substation feeders and of powerline freeway crossings. In 1969, concealed 26,000-volt cables replaced aerial cable crossings of the Seattle Freeway at Mercer Street, South Adams Street and South Albro Place. Engineering of the South Chicago Street Freeway crossing was completed so that construction of manholes and installation of conduits and cables under the Freeway could proceed early in 1970. Ductwork for a concealed bridge crossing over SR-509 (a limited access secondary state highway under construction south of Seattle) at South 136th Street was installed in 1969.

Continuing conversion of service to individual commercial and industrial premises located outside underground network areas from overhead to underground facilities, continuing conversion of feeders to substations from overhead to underground installations, and the continuing freeway crossing conversions mentioned above contributed to the $1,130,000 total expenditure on commercial conversions recorded by Seattle City Light in 1969. Part of this expenditure covered commitments contracted in 1968, a year for which the Underground Wiring Report recorded no expenditures in this category. Anticipated commercial conversion expenditures for 1969 were only $158,000.

The so-called Stewart Street conversion, previously reported as a commercial district conversion, was transferred to the Underground Network Improvement program by the City of Seattle's 1970-1981 Capital Improvement Program and is reported on in Part III of this report.

No P. 7
per THO
4-23-70

C. UNDERGROUND CONVERSION ALONG PRINCIPAL ARTERIALS

Continuing programs to implement the City of Seattle's objective of improving the appearance of all the city's principal arterial streets by substituting underground wiring for overhead wiring along these streets within 25 years (the objective proclaimed by City Council Resolution 21340, adopted January 29, 1968) were established by the City Engineering and Lighting Departments in 1968. It was determined that $3,000,000 per year of Lighting Department revenues should be allocated to arterial underground conversions, of which $2,500,000 per year would be expended inside corporate Seattle and $500,000 per year on arterials outside the city, but within the Department's service territory.

Arterial undergrounding was to proceed in conjunction with other arterial improvement projects (street widening, paving, landscaping and/or beautification) initiated by the Engineering Department, according to Article II of Resolution 21340. Inside the city, arterial street improvements (including incidental undergrounding of street lighting circuits) were to be financed by the Engineering Department with funds from such sources as Forward Thrust bond proceeds, state Urban Arterials Board grants, federal grants for urban renewal projects, and municipal street improvement moneys. Outside the city, the Lighting Department was to collaborate with the King County Department of Public Works, Pacific Northwest Bell Telephone Company and CATV companies in the selection and construction of arterial undergrounding projects which primarily would involve principal routes leading into and out of the city.

1. Arterial Conversions within Seattle

In 1968, a mayoral committee including representatives of the Municipal Art Commission as well as of the Lighting and Engineering Departments initially selected six arterials within Seattle for undergrounding conversion. One project of the six, involving a portion of South McClellan Street, was completed in 1968 as far as it could be pending completion of a future Rainier Avenue South conversion project. An additional project, construction of underground ducts and vaults in anticipation of projected future improvement of a portion of Northeast 125th Street, was then included in the arterial conversion program for 1968-1969.

In 1969, the Engineering and Lighting Departments proposed arterial street improvements, including conversion to underground wiring, for inclusion in the program for 1970 and subsequent years. However, no new projects were formally authorized before the end of 1969 and no project in the current program was completed.

Expenditures and construction progress related to the Roosevelt Way Northeast and 35th Avenue Northeast projects, although substantial, were less than had been anticipated. Property-acquisition delays held up the Southwest Roxbury Street project, which had been expected to reach actual construction in 1969. The Meridian Avenue North and 15th Avenue Northwest projects were in the preliminary engineering stage at the end of 1969. Expenditures on the six projects are tabulated on page 10.

Expenditures related to the arterial undergrounding continuous program but not allocated to the six separately identified projects are included in the tabulation. The largest of these miscellaneous projects in respect to 1969 Lighting Department expenditures was initiated by Pacific Northwest Bell Telephone Company; it involved arterials in the Northgate area along which the telephone company desired to underground its wires. The Engineering Department included the undergrounding of street light and traffic control wiring in a new project to widen a portion of Olson Place Southwest, as well as in a South Lander Street improvement completed during 1969. The Lighting Department installed an underground duct and feeder along 24th Avenue Northwest, in anticipation of eventual conversion along that arterial, and also undergrounded electrical distribution along a portion of Sand Point Way Northeast, bordering a neighborhood LID conversion area.

2. Arterial Conversions outside Seattle

From arterial streets in suburban King County which the County Department of Public Works has announced plans to improve by widening, paving, and/or construction of curbs and sidewalks, the Lighting Department in 1969 selected six for conversion from overhead to underground in 1970 and 1971. Financing for the Department's share of estimated conversion costs totaling $2,264,000 in connection with the six projects would consist of the $500,000 annual allocation of Department revenues to suburban arterial undergrounding which had not been used in 1968 and 1969, plus the allocations for 1970 and 1971, plus part of the 1972 allocation. King County is to finance the undergrounding of street-light and traffic-control circuits, and the telephone and CATV companies will take part in the conversion project as they have inside the city.

Preliminary engineering design of the six suburban arterial undergrounding projects was begun by the Lighting Department in 1969. Southwest Roxbury Street is an east-west arterial which lies on both sides of Seattle's south city limit. Underground conversion on the county side of the city limit is being coordinated with conversion work on the city side of the line in order to make this a complete conversion. The other five projects all concern major north-south arterial routes entering and leaving the city. The Meridian Avenue North and 15th Avenue Northeast projects involve arterials that are being improved inside the city.

1968 and 1969

Arterial Undergrounding Program Expenditures

(Thousands of Dollars)

PROJECTS	1968 Expenditures and Commitments			Anticipated 1969 Expenditures			Actual 1969 Expenditures		
	Engineer Dept.	Lighting Dept.	Total	Engineer Dept.	Lighting Dept.	Total	Engineer Dept.	Lighting Dept.	Total
Miscellaneous arterial conversions	0	0	0	0	0	0	2	92	94
South McClellan St., 25th Ave. S. to 31st Ave. S.	45	178	223	0	0	0	0	0	0
N.E. 125th St., 5th Ave. N.E. to 35th Ave. N.E.	3	28	31	58	0	58	4	8	12
Roosevelt Way N.E.,N.E. 91st to N.E. 145th St.	30	139	169	170	1,000	1,170	160	616	776
35th Ave. N.E.,N.E. 84th to N.E. 137th St.	20	3	23	170	1,000	1,170	160	419	579
Meridian Ave. N., N. 92nd to N. 110th St.	44	1	45	15	200	215	0	4	4
S.W. Roxbury St., 4th Ave. S.W. to 35th Ave. S.W.	3	1	4	147	600	747	6	1	7
Delridge Way S.W. (traffic control)	15	0	15	0	0	0	0	0	0
West Marginal Way S. W. (traffic control)	2	0	2	33	0	33	3	0	3
South Lander St. (traffic control)	2	0	2	65	0	65	65	0	65
15th Ave. N.W.,N.W. 50th to N.W. 65th St.	0	0	0	40	200	240	2	0	2
	164	350	514	698	3,000	3,698	402	1,140	1,542

Proposed Arterial Underground Conversions in King County

PROJECT	1970 (thousands of dollars)	1971 (thousands of dollars)	TOTAL (thousands of dollars)
S. W. Roxbury St., 4th Ave. S.W. to 35th Ave. S.W.	238	336	574
Meridian Ave. N., N. 145th to N. 163rd St.	200	180	380
5th Ave. N.e., N.E. 145th to N.E. 165th St.	172	0	172
15th Ave. N. E., N.E. 145th to N.E. 175th St.	285	100	385
Bothell Way N.E., N.E. 145th to N. E. Hamlin Road	324	180	504
Des Moines Way S., from S. 128th to S. 152nd St.	249	0	249
	1,468	796	2,264

3. Scenic Points Beautification

The Lighting Department completed three "spot" conversions to improve the appearance of so-called traffic triangles visible from Seattle arterials and scenic drives. Triangles in the northeast part of the city (22nd Avenue N. E. and Northeast 54th Street) and in the southwest part of the city (39th Avenue S. W. and S. W. Juneau Street) were cleaned up by removal of two wood poles from each and the erection of aluminum street lighting standards supplied underground from the overhead facilities nearby. The two projects cost $1,500 each.

Beautifying the third scenic point, near Lake Washington at Lakeside Avenue South and South Lane Street, was a $32,000 project involving removal of eight wood poles, erection of five aluminum street light standards and one wood pole, construction of three manholes and two handholes, conversion of three apartment-house primary and three apartment-house secondary services from overhead to underground, and conversion of the electrical distribution serving the immediate neighborhood from a 4,000-volt system to a 26,000-volt system.

D. WATERFRONT UNDERGROUND CONVERSION

The Lighting Department expended $83,000 in 1968 and $84,000 in 1969 on engineering and construction related to the undergrounding of electrical distribution facilities along Seattle's Alaskan Way waterfront. The Lighting Department had programmed $900,000 and the Engineering Department $200,000 of expenditures on this improvement for 1969, but design and construction work on the project was suspended on April 1, 1969, to await design decisions affecting the general development of this portion of the waterfront which are expected to be forthcoming from the municipal Department of Community Development in the spring of 1970.

The underground distribution facilities that will be constructed to serve the waterfront cannot be designed until it has been determined whether consumer premises will be located under the existing viaduct, along present railroad rights of way west of the viaduct, or along the Elliott Bay side of Alaskan Way.

PART II: NEW CONSTRUCTION

A. UNDERGROUNDING NEW CONSTRUCTION IN OVERHEAD-SYSTEM AREAS

Seattle City Council Resolution 21340, Section V, states that "Distribution of electric energy, telephone and other utility services to all new construction shall be accomplished insofar as practicable by underground facilities." Sponsors of new construction representing electric-system loads which, on account of their size and location, could be served from overhead distribution generally are given the option of receiving underground service by paying part of the installation cost of undergrounding. Builders and developers considering this option tend to interpret the word practicable in an economic sense: do the benefits of undergrounding justify an additional investment?

In regard to residential construction, individual homesites and very small tracts situated in neighborhoods generally served by overhead distribution are often seen as deriving less benefit from undergrounding than larger tracts, particularly when the individual homesites or small tracts are not "view property". For this reason, undergrounding of utilities serving newly-constructed residences of average price has tended to be confined to the larger tract developments, and the undergrounding program related to new construction has come to be called the "new areas" program. The Lighting Department's 1969-1980 Capital Improvement Program allocated $1,000,000 of expenditures to "new areas" undergrounding in 1969 and $20,700,000 to this continuing program for the 12-year period.

Actual Lighting Department expenditures for provision of underground electric service to new construction in overhead service areas totaled $1,019,000 in 1968 and $1,535,000 in 1969. Projected expenditures for 1970 related to this program total $1,588,000, of which $304,000 is expected to be spent on residential and $1,284,000 on other new construction.

The following table, based on an accurate count of all newly constructed premises "cut in" to electric service from the Lighting Department's lines for the first time in 1969, probably is the most dependable indicator of the degree to which builders chose underground service for various types of construction rather than overhead service. The table refers to the entire Department service territory, including areas outside as well as inside Seattle. In this connection, it should be noted

that more than half of the single-family residences constructed in this service territory were outside the city. Moreover, a number of apartment buildings, some commercial buildings and multi-unit dwellings, and a few single-family residences included in this recapitulation were erected in areas where only underground electrical distribution was available.

	Underground Services	Overhead Services	TOTAL	Per cent Underground
Single-family residences	371	607	978	37.9
Duplex residence structures	30	19	49	61.2
Duplex dwelling units	55	38	93	59.1
Triplex residence structures	39	8	47	83.0
Triplex dwelling units	117	24	141	83.0
Apartment buildings	180	3	183	98.4
Apartment dwelling units	3,844	71	3,915	98.2
Commercial buildings	169	304	473	35.7

Among the larger underground service installations to serve new construction in normally overhead service areas which the Lighting Department completed or substantially completed in 1969 were the following, with approximate installation costs:

Group Health Hospital Addition	$ 25,000
Queen Anne Hill Convalescent Center	250,000
Low-Income Housing, 8th Ave. N.E. & N.E. 112th St.	22,000
Low-Income Housing, 38th Ave. S. & S. Myrtle St.	90,000
Children's Orthopedic Hospital	20,000
Seattle Community College, North Campus	100,000
Port of Seattle, Cargill Grain Terminal (Pier 25)	50,000
West Seattle General Hospital Addition	50,000
Northgate Shopping Center Additions	250,000
Seattle Construction Center	18,000

B. URBAN-RENEWAL AREA UNDERGROUNDING

In June 1969, the City Engineering Department completed installation of the duct and manhole system for an underground network electrical distribution system that will supply the new South Seattle redevelopment in an area bounded by South Dakota and South Snoqualmie Streets, 5th Avenue South and the Seattle Freeway. The network electrical installations were completed during the remainder of 1969. At year-end the principal tasks remaining to be completed in connection with this first Seattle federally-aided Urban Renewal project were the conversion of feeders passing through the area to underground and the work on abutting private property to provide individual service connections. These tasks were expected to be finished by mid-1970.

By the end of 1969, the Engineering Department had expended $36,000 and the Lighting Department $577,000 on the South Seattle redevelopment project undergrounding. Anticipated expenditures to complete the project in 1970 -- $2,000 by the Engineering Department and $82,000 by the Lighting Department -- would bring the total project cost to $697,000, of which approximately half was expected to come from federal funds.

The Lighting Department had programmed expenditure of $187,000 on the Pike Plaza redevelopment project, another Urban Renewal project, in 1969, but was not able to commence work on the project in 1969 because final planning of the redevelopment by other agencies was not yet complete.

(Underground utility systems constructed to serve urban redevelopment areas replace overhead or underground facilities previously installed in the areas and constitute conversions where the existing facilities were overhead. However, the work of installing new underground systems in areas cleared of previous construction is similar to work in new areas.)

PART III UNDERGROUND SYSTEM IMPROVEMENTS

A. UNDERGROUND TRANSMISSION CONSTRUCTION

The major underground transmission project planned by the Lighting Department in 1969 is a 115,000-volt pipe-type line that will interconnect the new Massachusetts Receiving Substation with the proposed Union Street Substation, also near the waterfront, and with the existing Broad Street Substation. Construction of the underground transmission line is scheduled to take place during 1971. Total cost of the project is estimated to be $3,141,000.

Actual expenditures of the Department on the Massachusetts-Union-Broad underground transmission, covering engineering and other preliminary work, totaled $22,000 in 1968 and $11,000 in 1969, as against anticipated expenditures of $34,000 and $611,000 for the two years. At the end of 1969, expenditures in connection with the project totaling $709,000 were projected for 1970.

No expenditures were recorded in 1969 in connection with the proposed 115,000-volt underground transmission link between the new University Receiving Substation and North Receiving Substation. This line is scheduled to be constructed in the mid-1970s. The purpose of both this link and the Massachusetts-Union-Broad link is to augment the capacity of the linked substations to serve anticipated electric load growth in their respective areas. Although it would be practical, from an engineering standpoint, to support these lines on conventional towers or steel poles, appearance and space considerations influenced a decision to place them underground.

B. UNDERGROUND NETWORK IMPROVEMENTS

The Lighting Department's Capital Improvement Program for 1969-1980 provides for expenditures on downtown underground distribution network improvements totaling $47,900,000 during the 12-year period. Expenditures anticipated to total $1,662,000 in 1968 and $2,739,000 in 1969 actually totaled $2,677,000 in 1968 and $2,366,000 in 1969.. Expenditures on this continuing program totaling $3,291,000 are projected for 1970.

1. Network capacity augmentation to serve load additions

Following energization of the new Massachusetts Receiving Substation in the fall of 1969, the Lighting Department proceeded immediately to construct the feeder system that will enable the new facility to relieve heavily loaded circuits in

downtown Seattle supplied by Broad Street and Central Substations. By the end of 1969, the first phase of feeder construction had been completed and the second phase 40 per cent completed. Energization of the completed feeder system was scheduled for mid-June 1970. Design criteria for the future Union Street Receiving Substation and for new Broad Street and Central Substation network feeder groupings were developed on the basis of computer studies.

Since 1951, when Seattle took over Puget Sound Power & Light Company facilities in the downtown area, the underground electrical systems have been consolidated, modernized and greatly augmented to meet requirements of load growth caused by increasing use of electrical equipment and machinery and by growing demand for air conditioning and higher lighting levels. In very recent years, a salutary surge in downtown building construction has added greatly to the burden on the underground networks, creating a condition of which several underground electrical fires were symptomatic. This is the situation underlying adoption of the Lighting Department's very extensive network improvement program.

Among the buildings which have added substantial loads to the underground networks are the Seattle-First National Bank building, with 22,000 kilovolt-amperes, in 1968, and (in 1969) the new Pacific Northwest Bell, Washington Mutual Savings Bank and Washington Plaza buildings, with 1,500 kva each; the Plaza 600 and Pacific buildings, with 2,000 kva each; the King County Administration Center, with 4,000 kva; and modernization (including air conditioning) at the Bon Marche, 1,500 kva. Still others are planned or under construction.

In addition to completing Massachusetts Substation, extending its feeder system, and planning Union Street Substation, the Lighting Department installed some 8,000 current limiters on the Broad Street Substation 13,000-volt and Central Substation 4,000-volt underground networks in 1969, replaced Broad Street feeder cables with cables of greater capacity, installed 10 "spot" networks in individual buildings, enlarged nine handholes into manholes or vaults, modernized 17 manholes and transformer vaults, and constructed new duct runs the length of Second Avenue for future feeder installations.

2. <u>Geographical extension of underground network area</u>

The Engineering and Lighting Departments in 1969 engineered the extension of downtown underground network distribution into two small areas peripheral to the central business district and adjacent to the Seattle Freeway so that a contract

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1969 - 1974

#2

covering construction of the necessary ducts, manholes, etc., in both areas could be awarded in March 1970. One part of the project, formerly called the "Stewart Street conversion", involves the triangle formed by Boren Avenue, Denny Way and the Freeway. The other part consists of the blocks between Madison and Jefferson Streets, from Fifth Avenue east to the Freeway. Estimated cost of the combined projects, which are scheduled to be completed by mid-1971, is $643,000, of which $139,000 was expended by the Engineering Department and $4,000 by the Lighting Department in 1969.

Engineering of the long-planned extension of underground network distribution into another overhead-service area along the downtown periphery, bounded by Elliott and First Avenues and by Lenora Street and Denny Way, has been virtually completed but was suspended in 1969 pending finalization of the Bay Freeway plans by agencies other than the Engineering and Lighting Departments. A decision as to the exact route of the proposed freeway is expected to be forthcoming in 1970. Final cost of extending the underground network in the area cannot be estimated until it is known whether the proposed freeway will traverse it from end to end (one plan under consideration) or merely cross it.

Extension of underground network distribution into a much larger area now served by overhead distribution is contemplated by the City's Capital Improvement Program in connection with the Bay Freeway project. This is the area between Aurora Avenue North and the Seattle Freeway, from Denny Way to the south shore of Lake Union. Present planning contemplates that underground network extensions into Bay Freeway construction areas will not begin before 1971 and will not be completed before 1975. Extension of underground network distribution into another peripheral area, the small triangle formed by South Jackson Street, Fifth Avenue South and the Seattle Freeway, is programmed for 1976 or later.

PART IV: CONCLUSION

Five of the eight programs implementing the City of Seattle's wire-undergrounding policies either nearly met or greatly surpassed the anticipated goals (as measured by planned and actual expenditures) during 1969. Some undergrounding had to be postponed in deference to the necessity for thorough planning and public accord relative to the proposed Pike Plaza redevelopment, waterfront revision and Bay Freeway development. Construction of underground transmission did not begin in 1969, as planned. However, this is a new facility which does not replace a facility that has been overhead; in this instance, undergrounding prevents construction of overhead facilities that might have been found objectionable by some citizens.

The only major program that fell behind in 1969 (as in 1968) was the principal arterials conversion program. Both because of the extraordinary diversity of the activities that have to be coordinated in order to get operations at the construction sites sequenced properly, and because of the number of agencies, companies and sources of financing involved, this program has required the Engineering and Lighting Departments to develop new managerial skills. We are working toward adoption of routines in place of much of the improvising this program has required so far.

Although the crews and contractors involved in wire undergrounding have been utilized fully and the Lighting Department added ~~20 men~~ to its underground engineering staff in 1969, it appears that the principal arterials undergrounding might progress more rapidly if additional projects were selected, so that there would be more places for crews and contractors to work and less waiting for some particular operation to be completed. The Engineering and Lighting Departments have proposed principal arterials for inclusion in the underground conversion program, but have not been officially authorized to proceed with work on projects beyond those included in the 1968-1969 program.

The coordination of wire undergrounding along principal arterials with widening, paving, curb and sidewalk construction, or other street improvements, as contemplated by Section II of Resolution 21340, probably cannot secure the desired amount of overhead wire removal along the main routes of entrance into and departure from the city, other than the Freeway. The reason for this is that these main entrance-egress routes -- Aurora Avenue North and Rainier Avenue South, in particular -- have already been widened, paved, and otherwise improved (except for wire undergrounding)

along most or all of their length within the city. Wire undergrounding along portions of Aurora North and Rainier South, without reference to other kinds of street improvement, has been included in the Lighting Department's portion of the Capital Improvement Program for 1970-1981 (Projects Nos. 55-58).

In connection with underground conversion projects generally, the Lighting Department experienced some problems in 1969 in getting around promptly to the removal of no-longer-needed poles and wires in areas where distribution has been transferred to new underground installations. The Department's overhead crews and equipment were kept extremely busy throughout 1969 with the ongoing conversion of much of the existing overhead distribution from 4,000-volt to 26,000-volt operation so that additional distribution substations and substation sites (which would be difficult to acquire) will not be required for the system. The schedule for installing improved arterial street lighting also puts pressure on the overhead crews and equipment. It may be necessary to find contractors to handle the work of removing surplus poles and wires in undergrounded neighborhoods, perhaps in cooperation with the telephone and CATV companies which used the same poles.

Respectfully submitted,

RWMorse

ROY W. MORSE, City Engineer

JOHN M. NELSON, Superintendent of Lighting

THE CITY OF SEATTLE J. D. BRAMAN, MAYOR

BOARD OF PUBLIC WORKS

E. G. HENRY, SECRETARY

404 Seattle Municipal Building • Seattle, Washington 98104 • JUniper 3-2040

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CF 263197

Re: Annual Underground Wiring Report
Engineering and Lighting Departments
1968

March 26, 1969

X - Light Dept

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The City Council
City of Seattle

Honorable Members:

The Superintendent of Lighting had before the Board of Public Works in regular session today the Annual Underground Wiring Report as required by Section VIII of City Council Resolution 21340.

To the tabulations showing the programmed and actual expenditures for the various projects have been added (1) an introductory statement relating to the two Department's activities to the various sections of the Resolution, and (2) notes amplifying some of the entries in the Lighting Department tabulation.

The Board concurred in the recommendation that this report be forwarded to your Honorable Body for information and filing.

Yours very truly,

BOARD OF PUBLIC WORKS

E. G. Henry
Secretary

EGH:fb
Att.

cc: City Engineer ✓
Superintendent of Lighting

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ANNUAL UNDERGROUND WIRING REPORT

In Accordance with City Council Resolution 21340

THE BOARD OF PUBLIC WORKS

CITY OF SEATTLE

March 26, 1969

Submitted herewith is the combined report of the Lighting and Engineering Departments required by Section VIII (a) and (b) of Resolution 21340, passed by the Seattle City Council January 29, 1968, relating to the placing of overhead wiring underground. The undergrounding projects listed in the attached tabulations are cross-referenced to the six-year and 12-year capital improvements programs adopted by the City in 1967 and 1968, respectively, for 1968-1973 and 1969-1980.

The Engineering Department projects reported are street-lighting and traffic-control wiring, while the Lighting Department projects are electrical distribution and transmission. Privately-owned communications circuits are not covered in this report. Arterial street improvements and the waterfront, First Hill, and Stewart Street commercial-district conversion projects are joint efforts of the two departments and are covered as such. In addition, the Lighting Department projects include residential and commercial area conversions to underground distribution, provision of underground service to newly-constructed developments, undergrounding in urban-renewal areas, the improvement and expansion of downtown underground distribution networks, and the construction of underground 115,000-volt transmission lines.

Resolution 21340 sets forth seven programs which are to carry out the declared policy of the City in regard to the undergrounding of utility wires and the improvement and beautification of the city's principal arterial streets. Activities of the Engineering and Lighting Department as related

to the Resolution's numbered programs are as follows:

I. Inclusion of funds for undergrounding and beautification in capital improvement programs: For street lighting and traffic control underground wiring included in arterial widening and beautification projects, Engineering allotted $355,000 of its 1968 CIP expenditures and $1,178,000 of its 1969 CIP expenditures. The Lighting Department allotted $7,934,000 of its 1968 CIP expenditures and $9,862,000 of its 1969 CIP expenditures to undergrounding of distribution and transmission facilities.

II. Coordination of street improvement with undergrounding projects. The Engineering and Lighting Departments coordinated street improvements with traffic-signal, street-lighting and electrical distribution undergrounding in the following projects -- Completed in 1968: South McClellan Street and Rainier Avenue South; Delridge Way Southwest; and Southwest Orchard Street. Under construction in 1968: Roosevelt Way Northeast; 35th Avenue Northeast; Meridian Avenue North; and South Lander Street. Preliminary engineering in progress in 1968: West Marginal Way Southwest; Southwest Roxbury Street; and 15th Avenue Northwest.

III. Municipal Art Commission participation in selection of and assignment of priorities to street-improvement projects. The utility undergrounding and beautification projects along principal arterials on which the Engineering and Lighting Departments collaborated in 1968 are the six given priority by action of the Municipal Art Commission in January and February 1968: namely, Roosevelt Way Northeast, Meridian Avenue North, 35th Avenue Northeast, Southwest Roxbury Street, 15th Avenue Northwest, and Rainier Avenue

South-South McClellan Street-South Lander Street improvement.

IV. Incorporation of undergrounding in local-improvement-district-sponsored projects. Residential neighborhood undergrounding projects financed through LID formation include those known as View Ridge No. 1, Northeast 42nd Street, and Magnolia-Carleton, all under construction; and View Ridge No. 2, Endolyne, Hawthorne Hills, North Beach and Blue Ridge, for which engineering is in progress and LID petitions have been filed. LID petitions are being circulated, with good prospects of approval, in the Denny-Blaine, Northeast 88th Street, Sheridan Heights, Sheridan Beach, Arroyo Heights and Sand Point Country Club neighborhoods.

V. Provision of underground utility service to new construction. Lighting Department expenditures to provide underground service to new developments where the developers share in the sponsorship amounted to $1,091,000 in 1968 and are estimated to total $1,000,000 in 1969. In 1968, underground service was provided for 5,300 new residences and 439 new commercial developments.

VI. Allocation of costs of undergrounding projects undertaken for esthetic reasons, load-density reasons, or both:

(a) Utility bears cost of work on abutting private property: street-light and traffic-control underground wiring in connection with arterial improvements; the Stewart Street and waterfront underground conversion projects; the improvement and extension of downtown underground distribution

networks; the construction of 115,000-volt underground transmission links between central district receiving substations.

(b) Utility and owners of abutting properties share costs of work in the public right of way: East and West Laurelhurst residential undergrounding projects are current examples of work done outside the LID framework, but this description fits the residential LID undergrounding projects as well.

(c) Owners of abutting properties pay only for work on their own properties necessary to permit acceptance of underground service: Capitol Hill, First Hill and South Seattle urban renewal conversions and underground extensions to serve new construction.

VII. Implementation of City's purpose to underground all utilities along major arterials and at scenic points within the city within 25 years. All projects mentioned above under Section II contribute to realization of this purpose.

VIII. Reporting progress to date and plans for the year ahead. This is the first submittal in response to this requirement.

The Engineering and Lighting Departments' actual construction accomplishment in 1968 amounted to approximately 90 per cent of the expenditure goals set up in the 1968-1973 capital improvements program. The anticipated accomplishment was $8,289,000 for the two departments, whileactual expenditures were $7,511,000 -- $355,000 by Engineering and $7,156,000 by Lighting. Achievement fell somewhat short of expectation because of the large amount of effort that had to be spent in reviewing alternative-

improvement-project possibilities, in engineering and scheduling the work, in working with interested citizen groups, in investigating financial resources available for support of the work, and in mobilizing and organizing the men, equipment and materials that were necessary in order to expand the beautification and undergrounding programs to the full extent authorized by Resolution 21340.

The results of the preparatory steps taken in 1968 began to be visible in the form of completed projects last year. It is the hope of both Departments that this planning will be effective in gaining momentum for the various programs with which Resolution 21340 is concerned.

John M. Nelson, Superintendent of Lighting

Roy W. Morse, City Engineer

ANNUAL UNDERGROUND WIRING REPORT

RESUME OF PROGRESS TO DATE
AS PER RESOLUTION 21340, SECTION VIIIa

March 17, 1969

1969 Priority No.	1968 CIP No.	Description	Work by Force Acct. or Contract Pre.	Con.	Anticipated Expenditures 1968	Actual Expenditures & Commitments 1968	Estimated Expenditures 1969	Estimated Cost 1968-1969
					(000's omitted)			
LT 13	LT 10	115 Kv Underground Transmission This project will provide underground transmission lines between the new Massachusetts Street and Union Street substations and Broad Street Substation and between North and University Substations. These new substations will provide added sources of power for the Jackson to Spokane Street area and the downtown underground network and University area. These areas are experiencing exceptional load growth due to new construction.	FA	C	$ 34	$ 22	$ 611	$ 633
LT 15	LT 21	Downtown Underground Network Improvements This provides for the orderly expansion and improvement of the underground network in the downtown area.	FA	FA-C	1,500	2,677	2,500	5,177
LT 16	LT 22	Waterfront Underground Conversion This provides for converting the existing overhead system to underground along the Elliott Bay waterfront from Bay Street to Jackson Street and from the waterfront to the existing downtown underground area. The project will be coordinated with the waterfront redevelopment program, which might result in a different schedule than indicated.			900	83	900	983
LT 17	LT 23	Residential Conversions This provides for the conversion of overhead to underground in residential areas on a cooperative basis. Our estimates assume that the interest in this type of project will be maintained at a high level. The following projects are definitely scheduled.	FA	FA-C	2,000 (1)	400	639	1,039

(1) This 1968 CIP item included 1969 CIP Items LT 17, LT 18, LT 19, LT 20, LT 21, LT 22, LT 23 and LT 24

1969 Priority No.	1968 CIP No.	Description	Work by Force Acct. or Contract Pre.	Con.	Anticipated Expenditures 1968	Actual Expenditures & Commitments 1968	Estimated Expenditures 1969	Estimated Cost 1968-1969
LT 18	(LT 23)	View Ridge #1 This is an L.I.D. providing for the conversion from overhead to underground of 250 homesites.	FA	FA-C	See Note (1)	$ 349	$ 54	$ 403
LT 19	(LT 23)	Magnolia-Carleton This is an L.I.D. providing for the conversion from overhead to underground of 150 homesites.	FA	FA-C	See Note (1)	234	77	311
LT 20	(LT 23)	West Laurelhurst #1 This is a voluntary underground residential conversion of 650 homesites with customers contributing to the cost.	FA	FA-C	See Note (1)	82	400	482
LT 21	(LT 23)	NE 42nd Street This is an L.I.D. providing for the conversion from overhead to underground of 34 homesites.	FA	FA-C	See Note (1)	1	30	31
LT 22	(LT 23)	Commercial Conversions This provides for conversion of overhead to underground in established commercial areas. The following projects are definitely scheduled.	FA	FA	See Note (1)	438	200	638
LT 23	(LT 23)	First Hill Commercial Conversion This provides for the conversion from overhead to underground from Pine Street to Columbia and from the Freeway to Minor. *Committed funds	FA	FA	See Note (1)	1,442	(1,000)*	1,442
LT 24	(LT 23)	Stewart Street Commercial Conversion This provides for undergrounding to the Freeway along a main arterial to the city business area.	FA	FA	See Note (1)	20	100	120
LT 25	LT 24	Underground New Areas This provides for undergrounding new commercial areas, shopping centers, schools, apartments, etc., and cooperation with developers of new residential areas.	FA	FA-C	$ 500	1,091	1,000	2,091

1969 Priority No.	1968 CIP No.	Description	Work by Force Acct. or Contract Pre.	Con.	Anticipated Expenditures 1968	Actual Expenditures & Commitments 1968	Estimated Expenditures 1969	Estimated Cost 1968-1969
LT 26		Urban Renewal - Pike Place Plaza To complete overhead to underground	FA	FA-C	$ 0	$ 0	$ 187	$ 187
LT 29	LT 26	Urban Renewal - South Seattle This provides for conversion of overhead to underground between South Dakota and Snoqualmie Streets from Fifth Avenue South to the Freeway.	FA	FA-C	0	0	164	164
LT 31	LT 25	Principal Arterials Underground Program This project provides for the conversion of present overhead wiring to underground along principal arterials, as contemplated in the Forward Thrust Program. This project will be coordinated with the Street Improvement Program of the City Engineering Department. S. McClellan Street project has been completed and the following projects are definitely scheduled. (2) This 1968 CIP item included 1969 CIP Items LT 32, LT 33, LT 34, LT 35 and LT 36.	FA	FA-C	3,000 (2)	178	0	178
LT 32	(LT 25)	Roosevelt Way N.E. Arterial conversion, N.E. 91st to N.E. 145th.	FA	FA-C	See Note (2)	134	1,000	1,134
LT 33	(LT 25)	35th Avenue N.E. Arterial conversion, N.E. 84th to N.E. 13[illegible]th.	FA	FA-C	See Note (2)	3	1,000	1,003
LT 34	(LT 25)	Meridian Avenue N. Arterial conversion, North 92nd to North 110th.	FA	FA-C	See Note (2)	1	200	201
LT 35	(LT 25)	S.W. Roxbury Street Arterial conversion, 4th S.W. to 35th S.W.	FA	FA-C	See Note (2)	1	600	601
LT 36	(LT 25)	15th Avenue N.W.	FA	FA-C	See Note (2)	0	200	200
					$7,934	$7,156	$9,862	$17,018

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WORK ACCOMPLISHED 1968

LT 13 -- 115 Kv Underground Transmission

Engineering costing $22,000 was done in preparation of plans and specifications for the 115 kv transmission lines between Massachusetts Street, Union Street and Broad Street substations scheduled for start of construction in 1969.

LT 15 -- Downtown Underground Network Improvements

Work done on this project includes:

4th Alley - Spring to Seneca Street	$ 33,619
Washington Plaza	89,273
Sea-First Bank Building	210,056
13 Kv Duct Runs, Second Avenue	1,049,135
Increase Capacity of 13 Kv Feeders - 500 MCM Cable Program	477,988
Increasing Service Capacity to Downtown Underground Customers, Miscellaneous Adjustments and Revisions to Underground Network	817,000

LT 16 -- Waterfront Underground Conversion

A portion of the Waterfront Underground Conversion, consisting of vault construction and conduit installation to serve Piers 46 and 48, was completed in 1968 at a cost of $83,000.

The continually changing plans of the waterfront redevelopment program has delayed this project.

LT 17 -- Residential Conversions

The four projects, LT 18, LT 19, LT 20 and LT 21, are under construction by Board of Public Works contracts which will involve the conversion of 1,084 homesites.

Preliminary engineering is approximately 50% complete for the Endolyne, View Ridge No. 2, Hawthorne Hills, North Beach and Blue Ridge residential districts, involving 1,170 homesites. Local Improvement District petitions have been filed and are awaiting public hearings.

The Denny-Blaine, N.E. 88th Street, Arroyo Heights, Sheridan Heights, Sheridan Beach and Sand Point Country Club residential districts are presently circulating petitions for undergrounding L.I.D.'s. Approximately 750 homesites are included in these areas.

The proponents of underground wiring in Brighton Beach and Broadview areas apparently have insufficient support for their projects.

LT 17 -- Residential Conversions (continued)

We believe this interest in residential conversion is partially due to the new program for Local Improvement District financing approved in March 1968 by the City Lighting and Engineering Departments with the following charges to the customer:

	1968	1969
Power and street lighting in the public right-of-way	$415.00	$455.00
Telephone in the public right-of-way	150.00	175.00
Local Improvement District administration	50.00	50.00
Cost per buildable site in the public right-of-way	$615.00	$680.00

"The owner will provide his own underground service and service entrance conversion on his private property."

LT 25 -- Underground New Areas

New builders and homeowners have been very receptive to underground. During 1968, 5300 or 82.3% of 6438 residential services for new construction and 439 or 55% of 798 new commercial services were underground.

LT 26 through LT 30 -- Urban Renewal

The South Seattle project was the only urban renewal under construction. Urban Renewal is installing the ducts, vaults and manholes and the Lighting Department will furnish and install all the electrical equipment in this ordinance underground area.

LT 31 -- Principal Arterials Underground Program

This report includes the work on the five arterial projects, LT 32 through LT 36. Construction is in progress on the Roosevelt Way N.E. and 35th Avenue N.E. projects. Engineering work is in progress for underground facilities on all five listed projects. The duct and vault installation for the McClellan Street and Rainier Avenue South arterial project was completed.

Traffic Island Beautification

The Lighting and Engineering Departments have coordinated their work to remove excess overhead facilities from four traffic islands.

1969 WORK PROGRAM

Work on projects now under way will continue during 1969 and new projects will be started as indicated on the tabulated underground wiring report.

Downtown Underground Network Improvements will include construction of new feeders from the new Massachusetts Receiving Substation to supply new buildings now under construction.

Residential Conversions started in 1969 will apparently include View Ridge No. 2, North Beach, Endolyne, Blue Ridge, Hawthorne Hills and N.E. 88th Street. The others may or may not be approved by the property owners.

Commercial Conversions will include an 8-block area in the Capitol Hill district which is necessary because of load density in the vicinity of a substation. This will be the nucleus of a larger conversion area in the future.

Urban Renewal - South Seattle engineering is in progress and the Lighting Department plans to have the new underground system in operation in 1969.

Action on the other Urban Renewal projects appears doubtful for 1969.

The Principal Arterials Underground Program projects now under construction will continue with the electrical contracts to start shortly after the general project contracts are completed.

The Lighting Department has arranged with the Pacific Northwest Bell Company for joint construction of ducts and manholes on N.E. 125th Street between 5th Avenue N.E. and the Freeway and on Roosevelt Way N.E. from N.E. 110th Street to N.E. 125th Street.

The Lighting Department is also arranging for joint duct and manhole construction with the general arterial widening contract on N.E. 125th Street between 5th Avenue N.E. and 35th Avenue N.E.

ANNUAL UNDERGROUND WIRING REPORT*

RESUME OF PROGRESS TO DATE
AS PER RESOLUTION 21340, SECTION VIIIa

March 24, 1969

*STREET LIGHTING AND TRAFFIC CONTROL (All costs are for underground conforming construction of street lighting and traffic control systems)

1969 Project No.	1968 C.I.P. No.	Description	Street Lighting (S.L.) Traffic Control (T.C.)	Estimates SL & TC Total Costs	Estimated Expenditures and Commitments 1968	Estimated Expenditures 1969	Estimated Cost 1968-1969
				(000's omitted)			
		Arterial projects completed in 1968 included undergrounding costs for street lighting and/or Traffic control systems as follows:					
	STR 9	S. McClellan Street and Rainier Ave. S. (Street lighting portion is for conduit terminations to future metal street light pole locations)	SL & TC	45	45		45
	STR 16	Delridge Way S.W.	T.C.	15	15		15
	STR 17	S.W. Orchard Street	T.C.	10	10		10
		Street Improvement Program projects in the 1969 Capital Improvement Program including grounding costs for street lighting and for traffic control systems as follows:					
STR 11	STR 4	Roosevelt Way N.E. (under construction) See LT 32	SL & TC	200	30	170	200
STR 12	STR 5	35th Avenue N.E. (under construction) See LT 33	SL & TC	190	20	170	190

1969 Project No.	1968 C.I.P. No.	Description	Street Lighting (S.L.) Traffic Control (T.C.)	Estimates SL & TC Total Costs	Estimated Expenditures and Commitments 1968	Estimated Expenditures 1969	Estimated Cost 1968-1969
STR 13	STR 6	West Marginal Way Southwest, Unit A	T.C.	70	2	33	35
STR 14	STR 7	Northeast 125th Street	SL & TC	101	3	58	61
STR 15	STR 8	Meridian Avenue North (under construction) see LT 34	SL & TC	56	41	15	56
STR 17	STR 12	Southwest Roxbury Street, Unit A see LT 35	SL & TC	35	2	33	35
STR 18		Southwest Roxbury Street (Street lighting and traffic control costs along S.W. Roxbury Street from 17th Ave. S.W. to 34th Ave. S.W. and from 28th Ave. S.W. to 35th Ave. S.W.) see LT 35	SL & TC	75		75	75
STR 19	STR 12	Southwest Roxbury Street, Unit B see LT 35	SL & TC	80	1	39	40
STR 22	STR 13	15th Avenue Northwest see LT 36	SL & TC	160		40	40
STR 24	STR 11	South Lander Street, Unit A. (under construction)	T.C.	12	1	11	12
STR 25	STR 11	South Lander Street, Unit B.	T.C.	55	1	54	55
STR 28	STR 32	South Seattle Redevelopment Project (Urban Renewal) See LT 27 under construction	SL & TC	40	2	38	40
STR 37		Waterfr t Underground Conversion see LT 16	SL & TC	300		200	200

1969 Project No.	1968 C.I.P. No.	Description	Street Lighting (S.L.) Traffic Control (T.C.)	Estimates SL & TC Total Costs	Estimated Expenditures and Commitments 1968	Estimated Expenditures 1969	Estimated Cost 1968-1969
	STR 2	First Hill Street Light and Traffic Wire Undergrounding (under construction) see LT 23	SL & TC	121	20	101	121
	STR 3	Stewart Street Light and Traffic Wire Undergrounding (under construction) see LT 24	SL & TC	301	162	139	301
		3rd Avenue & Denny Way Triangle	SL & TC	2		2	2
				$1,868	$355	$1,178	$1,533