8. CITY OF OTTAWA UNDERGROUND WIRING POLICY

POLITIQUE SUR LE CÂBLAGE SOUTERRAIN DE LA VILLE D'OTTAWA

COMMITTEE RECOMMENDATIONS AS AMENDED

That Council:

1. **Receive the report entitled Underground Wiring Policy: Cost-Benefit Analysis Framework as prepared by HDR Corporation, dated 11 March 2011, a copy of which is on file with the City Clerk; and**

2. **Direct that the undergrounding of overhead wires on City right-of-ways be undertaken only when the full cost of burial is paid for by the requesting party, or as otherwise approved by Council on a case-by-case basis.**

RECOMMANDATIONS MODIFIÉES DU COMITÉ

Que le Conseil:

1. **reçoive le rapport intitulé Politique sur le câblage souterrain – Cadre de l'analyse coûts-avantages, tel que rédigé par HDR Corporation, en date du 11 Mars 2011, une copie duquel ayant été déposée auprès bureau du greffier municipal;**

2. **demande que l'enfouissement des câbles aériens sur les emprises de la Ville ne soit entrepris qu'une fois que le coût total de la mise en terre aura été payé par la partie requérante, ou en fonction des conditions approuvées au cas par cas par le Conseil.**

DOCUMENTATION

1. Deputy City Manager's report, Infrastructure Services and Community Sustainability, dated 21 March 2011 (ACS2011-ICS-CSS-0003)

2. Extract of Draft Planning Committee Minutes of 29 March 2011.

Report to/Rapport au :

Planning Committee
Comité de l'urbanisme

and Council / et au Conseil

March 21, 2011 / le 21 mars 2011

Submitted by/Soumis par : Nancy Schepers, Deputy City Manager/ Directrice municipale adjointe, Infrastructure Services and Community Sustainability/Services d 'infrastructure et Viabilité des collectivités

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City Wide/à l'échelle de la Ville Ref N°: ACS2011-ICS-CSS-0003

SUBJECT: CITY OF OTTAWA UNDERGROUND WIRING POLICY
OBJET : POLITIQUE SUR LE CÂBLAGE SOUTERRAIN DE LA VILLE D'OTTAWA

REPORT RECOMMENDATIONS

That Planning Committee recommend Council:

1. **Receive the report entitled Underground Wiring Policy: Cost-Benefit Analysis Framework as prepared by HDR Corporation, dated 11 March 2011, a copy of which is on file with the City Clerk; and**

2. **Direct that the undergrounding of overhead wires on City right-of-ways be undertaken only when the full cost of burial is paid for by the requesting party.**

RECOMMANDATIONS DU RAPPORT

Que le Comité de l'urbanisme recommande au Conseil :

1. **De recevoir le rapport intitulé Politique sur le câblage souterrain – Cadre de l'analyse coûts-avantages, tel que rédigé par HDR Corporation, en date du 11 Mars 2011, une copie duquel ayant été déposée auprès bureau du greffier municipal;**

2. **De demander que l'enfouissement des câbles aériens sur les emprises de la Ville ne soit entrepris qu'une fois que le coût total de la mise en terre aura été payé par la partie requérante.**

EXECUTIVE SUMMARY

Assumptions and Analysis:

Council directed staff to develop a formal policy for the burial of overhead wires and new power lines on City roadways. This direction was in response to a number of requests the City had received for burial, the high cost of undergrounding, and the recognized need to formalize the City's approach so that it is clear to all.

The burial of existing overhead electrical systems is very expensive with the cost being typically $2-5M per kilometre or four to ten times more than rebuilding an overhead system. There can also be significant costs to abutting property owners and to third parties, such as telecommunication companies. Moreover, the funding mechanisms through which underground conversions and installations can be done are limited, and for those that do exist, there may not be a willingness or ability to pay. Currently, burial of existing overhead wires is only funded at the expense of the requestor (generally a developer or households/businesses in some cases).

A cost-benefit analysis of eight sample streets considered to be representative of the main street types and profiles in Ottawa was undertaken. Based on net present value, the results show that the undergrounding of overhead wires cannot be justified based on direct financial return on investment (ROI), either as a stand-alone project or in combination with other street work. When broader socio-economic benefits and costs are included, the undergrounding of overhead wires is justified in some cases, with Traditional Main Streets (represented by Elgin and Bank at Glebe) and Mixed Use (represented by St. Joseph) having a strong NPV compared to other street sections.

The cost of undergrounding should also be considered in the context of the City's ability to meet its existing infrastructure renewal needs and other funding priorities. A review of potential funding options shows that while there are a few financial tools available to the City, none should be considered 'new' and therefore could not be used without impacting either general property tax rates or other City spending priorities.

Given the high cost associated with undergrounding, the on-going challenge to meet current infrastructure renewal needs and other priority needs, and in the absence of any new City funding source, it is recommended that the City should only consider the burial of overhead wires when the full cost is paid for by the requesting party.

Legal/Risk Management Implications:

There are no legal/risk management impediments to implementing the recommendations in this report.

Technical Implications:

N/A

Financial Implications:

The report recommends that undergrounding of overhead wires on City right-of-ways be undertaken only when the full cost of burial is paid for by the requesting party. If Planning Committee and Council approve this recommendation, there is no financial impact on the City.

Public Consultation/Input:

The project steering committee comprised of five City Councillors, development industry representatives, Hydro Ottawa staff and City staff has been consulted during this project.

A meeting with Bell Canada representatives was also held to discuss the project.

RÉSUMÉ

Hypothèses et analyse :

Le Conseil municipal a chargé le personnel de rédiger une politique officielle sur l'enfouissement des câbles aériens et des nouvelles lignes électriques dans les rues de la Ville. Ce mandat se veut une réponse à un certain nombre de demandes d'enfouissement reçues par la Ville, compte tenu du coût élevé du câblage souterrain et de la nécessité établie de systématiser l'approche de la Ville afin qu'elle soit claire pour tous.

L'enfouissement des réseaux électriques aériens existants coûte très cher, soit habituellement de 2 à 5 millions de dollars par kilomètre ou de quatre à dix fois le coût de la reconstruction d'un réseau aérien. Des coûts importants peuvent s'ajouter à cela pour les propriétaires de terrains adjacents ou pour des tierces parties, comme des entreprises de télécommunications. Par ailleurs, les mécanismes de financement des conversions et des installations souterraines sont limités, et lorsqu'ils existent, ils ne s'accompagnent pas toujours de la volonté ou de la capacité de payer. À l'heure actuelle, l'enfouissement des câbles aériens existants se fait uniquement aux frais de la partie requérante (habituellement un promoteur immobilier ou, dans certains cas, des ménages ou des entreprises).

Une analyse coûts-avantages de huit rues témoins considérées comme représentantes de divers types et profils de rue à Ottawa a été entreprise. D'après la valeur actuelle nette (VAN), les résultats montrent que l'enfouissement des câbles aériens ne peut pas se justifier en fonction du retour sur l'investissement financier (ROI) direct, qu'il s'agisse d'un projet autonome ou en conjonction avec d'autres travaux de voirie. Si l'on inclut de plus vastes avantages et coûts socio-économiques, l'enfouissement des câbles aériens se justifie dans certains cas, les rues principales traditionnelles (représentées par Elgin et Bank, dans le Glebe) et à vocation mixte (représentée par Saint-Joseph) ayant une VAN élevée par rapport à d'autres tronçons de rues.

Le coût de l'enfouissement doit également être envisagé dans le contexte de la capacité de la Ville à répondre aux besoins de renouvellement de son infrastructure et d'autres priorités de financement. Un examen des options de financement possibles montre que si la Ville a certains outils financiers à sa disposition, aucun d'entre eux ne doit être considéré comme « nouveau » et ne pourrait donc être utilisé sans avoir d'incidence sur les taux d'impôts fonciers généraux ou sur d'autres priorités de dépenses municipales.

Étant donné le coût élevé lié à l'enfouissement, le défi continu de répondre aux besoins actuels en renouvellement des infrastructures et d'autres besoins prioritaires, et en l'absence de nouvelle source de financement pour la Ville, il est recommandé que la Ville envisage uniquement l'enfouissement des câbles aériens lorsque la partie requérante en assume totalement le coût.

Incidences juridiques / concernant la gestion des risques :

Aucun obstacle lié aux incidences juridiques ou à la gestion des risques n'empêche la mise en œuvre des recommandations contenues dans ce rapport.

Incidences techniques :

Sans objet.

Répercussions financières :

Le rapport recommande que l'enfouissement des câbles aériens sur les emprises de la Ville soit entrepris seulement lorsque le coût au complet de l'enfouissement est assumé par les parties requérantes. Si le Comité d'urbanisme et le Conseil municipal approuvent cette recommandation, elle n'aura aucune répercussion financière sur la Ville.

Consultation publique / commentaires :

Le comité de direction du projet qui se compose de cinq conseillers municipaux, de représentants de l'industrie du développement immobilier, de membres du personnel d'Hydro Ottawa et d'employés de la Ville a été consulté au cours de ce projet.

De plus, une réunion avec des représentants de Bell Canada a eu lieu pour discuter du projet.

BACKGROUND

In October 2009, Council directed staff to develop a formal policy for the burial of overhead wires and new power lines on City roadways (ACS2009-ICS-CSS-0033). This direction was in response to a number of requests the City had received for burial, the high cost of burial, and the recognized need to formalize the City's approach so that it is clear to all.

Currently, burial of existing overhead power lines is only funded at the expense of the requesting party, which is normally a developer or in some cases households/businesses.

The specific direction to staff was as follows:

1. *Develop a formal policy, guided by the objectives set out in the City's Official Plan, that establishes criteria and priority for the burial of:*

    a. *Existing overhead power lines within the City; and,*
    b. *New power lines on the City's roadways.*

2. *Direct staff to conduct public consultations as part of the development of the policy described in Recommendation 1, and*

3. *Direct staff to work with both Hydro Ottawa and Hydro One to identify funding models for any incremental costs associated with Recommendation 1 above, including contributions from the electricity companies, project requestors, the municipality, and other sources.*

It should be noted that the scope of this work did not include undergrounding in new residential greenfield subdivisions and new collector roadways which is already being done. In this case, Developers install the ducts and transformer bases and pay Hydro Ottawa for all electrical installation. In return, the Developers receive a Net Present Value credit related to anticipated revenue to Hydro Ottawa from the new residential customers. This formula for cost allocation is per an Ontario Energy Board formula.

In accordance with Council direction the following actions have been undertaken to date:

- A project steering committee was established to guide the work, comprised of five City Councillors, Development Industry representatives, Hydro Ottawa staff, and City of Ottawa staff. A full list of steering committee members is attached as Document 1.
- HDR Corporation was engaged to develop a cost-benefit analysis framework for the burial of overhead wires and illustrate its application for a set of streets considered to be representative of the main streets types and profiles in Ottawa.
- A review of potential funding options was undertaken for the burial of overhead wires.

This report presents the findings of the cost-benefit analysis, reviews the funding options that were examined, and in absence of any identified new City funding source, provides the rationale for why the City should only consider the burial of overhead wires when the full cost is covered by the requesting party.

DISCUSSION

Requests to bury existing overhead wires generally relate to either aesthetic concerns, or to the development of properties that have wires in close proximity. In a number of cases, the ability to implement intensification and smart growth policies at the site level have been constrained by the costs and complexities associated with the burial of overhead wires.

A policy to bury overhead wires generally takes into account three main perspectives – *affordability, desirability, and technical feasibility*. The cost is often the most prominent consideration as burying overhead wires is very expensive, typically in the range of $2-5 M per kilometre, or four to ten times more than the cost to rebuild an overhead system. There can also be significant costs to abutting property owners and third parties such as telecommunication companies. Moreover, the funding mechanisms through which underground conversions and installations can be done are limited, and for those that do exist, the willingness and capacity to pay must also be considered.

The desirability of undergrounding is also a key factor. For this report, desirability is being assessed by modeling the various costs and benefits associated with undergrounding. Technical feasibility is also important, as there may be times when there are constraints within the right-of-way or timing issues relative to other City works that may make undergrounding unfeasible.

Currently, burial of existing overhead wires is funded by the requesting party. On a very limited basis, there are times when Hydro Ottawa will contribute to the cost of undergrounding but only in situations when the existing overhead infrastructure has reached its end-of-life. In such cases, Hydro Ottawa may pay what would have been the cost to rebuild the overhead infrastructure with the requestor paying the difference.

Cost-Benefit Analysis Framework and Analysis

To help understand the desirability and economics of undergrounding, HDR Corporation was retained to develop a cost-benefit analysis framework for the burial of overhead wires, and to use this framework to evaluate a set of sample streets that were considered to be representative of the main street categories in Ottawa.

For this assignment, HDR Corporation used its *sustainable return on investment* (SROI) framework which evaluates a wide spectrum of benefits and costs over the project's lifecycle. All costs and benefits were classified as either:

- Financial – where there is an immediate flow of cash (either positive or negative) to an affected stakeholder; or
- Sustainable – which captures the broad community/societal impacts of a project, including welfare and other non-financial impacts on organizations, people, and the environment.

This classification of costs and benefits leads to two sets of results and evaluation metrics. The metrics corresponding to the first category of costs and benefits are referred to as *financial return on investment*, and the metrics corresponding to the combined first and second category of costs and benefits are referred to as *sustainable rate of return on investment*, or SROI.

The principal output of the analysis is the Net Present Value (NPV), which shows the present-day value of the project's net benefits (i.e. present value of benefits minus present value of costs) over the entire project life-cycle stream. An NPV larger than zero indicates that the project is worthwhile as it generates benefits in excess of total costs. An NPV less than zero means the opposite, as the benefits generated by the project do not outweigh the associated costs. Other frequently used evaluation metrics derived from the values of costs and benefits include rate of return over project life, average annual rate of return, internal rate of return, cost-benefit ratio, and discounted payback period.

<u>Evaluation Criteria</u>
A total of eleven evaluation criteria were identified and included in the cost-benefit assessment - five benefits and six costs. The project steering committee felt that this combination of financial and sustainable criteria represent the main factors that would contribute to the cost-benefit of undergrounding.

The following five benefit criteria were used for modeling purposes:

- **Improved streetscape aesthetics due to removal of overhead wires (sustainable)**
  Generally determined by the increase in average property value within the neighbourhood.

- **Reduction in tree trimming costs (financial)**
  Trees growing under power lines no longer need to be trimmed once they reach mature size in order to avoid contact with the wires and potential damage to the wires that this may cause.

- **Reduction in number of outages and improvement in reliability of power supply to residential and non-residential customers (sustainable)**
  Reviewed studies tend to agree that underground systems generally have fewer interruptions and outages.

- **Intensification of redevelopment (sustainable)**
  The property owner is not limited by the setback requirements associated with overhead wires, and utilize the property as effectively or intensively as in the absence of the wires.

- **Reduction in service restoration costs (sustainable)**
  Undergrounding of the power distribution system should prevent most outages due to severe weather events.

The following six cost criteria were used:

- **Initial capital costs of construction/installation (financial)**
  Represents a range of costs, such as: excavation and civil works; removal of existing infrastructure; surface restoration; transformers and other equipment needed for service provisions; and, customer service connections.

- **Travel time disruption costs during construction when traffic is obstructed (sustainable)**
  Travel delays may result during the construction period, in particular if construction requires lane reductions, or entire street closure.

- **Additional operation and maintenance costs (financial)**
  Additional operation and maintenance costs associated with an underground system compared to an overhead system.

- **Additional utility easement rental costs (financial)**
  Undergrounding of overhead utility lines requires easements and transmission vaults to provide appropriate operation and maintenance services.

- **Installation of dedicated street lights (financial)**
  Given that some utility poles also support city street lights, when overhead wires are buried underground and utility poles removed, new poles for dedicated street lights, traffic lights, and signage will have to be installed.

- **Additional mapping and graphing of underground utilities (financial)**
  Represents initial one-time cost of mapping and graphing the wires that were just buried so as to create reference maps for any future plans and work that may involve digging the ground.

It should also be noted that a number of criteria were identified but ultimately not used, as they had a very small impact, were difficult to quantify, or had very low probability. Examples of these criteria include motor vehicle collisions, accidents involving overhead wires, utility relocation costs, impacts on parking revenue, impact on street trees and future utility coordination costs. These criteria and the rationale for why they were not used are described in more detail in the HDR report.

Sample Streets

Eight sample streets considered to be representative of the main street types and profiles in Ottawa were selected for the analysis. The specific streets analyzed were as follows (classified by category):[1[1]]

- Central Area: Metcalfe Street (Isabella St to Nepean St)
- Traditional Main Streets:
  - Elgin Street (Lisgar Street to Catherine Street)
  - Bank St (McLeod St to Rideau Canal)
- Arterial Main Streets: Bank Street (Rideau Canal to Queensdale Ave)
- Mixed Use/Town Centre/Suburban Arterial:
  - St. Joseph Boulevard (Belcourt Boulevard to Maisonneuve Street)
  - Strandherd Drive (Jockvale Road to Longfields Drive)
  - Eagleson Road (Queensway to Terry Fox Drive)
- Rural Village: Perth Street (Lundys Lane to Rochelle Drive), Richmond Village.

Two model scenarios were developed:

1) undergrounding as a stand-alone project; and
2) undergrounding in combination with other street work.

The specific data for each cost and benefit input was provided by Hydro Ottawa and various departments in the City of Ottawa. All future costs and benefits were discounted at an annual real discount rate of five per cent.

The cost-benefit model was estimated over a period of 31 years.[2[2]] Uncertainty as to the values of various inputs to the cost-benefit model is accounted for using risk analysis techniques which takes into account the probability distribution of model inputs.
In its essence, the risk analysis process involves an analysis and assumptions regarding the probability distribution of each uncertain model input (its average value, standard deviation, minimum, maximum, degree of skeweness, etc.) based on all available information. The final model outcomes are produced with traditional mean values as well as ranges of the corresponding probability distribution.

Results of Cost-Benefit Analysis

[1[1]] New and residential streets were not studied.

[2[2]] The analysis period of 31 years selected for this cost-benefit model is based on the typical life of underground wiring systems (estimated to be about 30 years) extended by one year that accounts for preliminary planning, design, and coordination that takes place in the first year of construction before the actual road work and electrical engineering work start.

The following tables show the results of the analysis, by street, based on net present value (NPV) in $millions per km.
Each table has been further divided into financial return on investment and overall sustainable return on investment (which includes both financial ROI and broader community benefits and costs). A full summary of the results are shown as part of the HDR cost-benefit analysis framework executive summary in Document 2 attached.

Cost-Benefit Analysis Outcomes, Undergrounding as a Stand Alone Project

Evaluation Metrics	Central Area	Traditional Main Streets		Arterial Main Streets	Mixed Use/ Town Centre/ Suburban Arterial			Rural Village
	Metcalfe	Elgin	Bank @Glebe	Bank St. S.	St. Joseph	Strandherd	Eagleson	Perth
Stand Alone Undergrounding - FINANCIAL ROI								
Net Present Value per km, NPV per km, $M	-$7.03	-$6.40	-$6.19	-$5.53	-$3.80	-$4.03	-$3.17	-$2.19
Stand Alone Undergrounding - SUSTAINABLE ROI								
Net Present Value per km, NPV per km, $M	$0.94	$7.39	$4.88	$2.39	$9.68	-$0.35	$0.07	-$0.08

Cost-Benefit Analysis Outcomes, Undergrounding in combination with other Street Work

Evaluation Metrics	Central Area	Traditional Main Streets		Arterial Main Streets	Mixed Use/ Town Centre/ Suburban Arterial			Rural Village
	Metcalfe	Elgin	Bank @Glebe	Bank St. S	St. Joseph	Strandherd	Eagleson	Perth
Undergrounding with Other Work - FINANCIAL ROI								
Net Present Value per km, NPV per km, $M	-$6.47	-$5.60	-$5.55	-$4.86	-$2.85	-$3.28	-$2.99	-$1.72
Undergrounding with Other Work - SUSTAINABLE ROI								
Net Present Value per km, NPV per km, $M	$1.50	$8.20	$5.51	$3.06	$10.64	$0.40	$0.26	$0.39

Overall, the results show that the undergrounding of overhead wires cannot be justified based on only financial ROI, either as a stand-alone project or in combination with other street work. This can be seen in the negative NPV for all street sections.

When broader socio-economic benefits and costs are included (i.e. sustainable ROI), the undergrounding of overhead wires is justified in some cases. The main observations are as follows:

- Metcalfe, Elgin, Bank at Glebe, Bank Street S., and St. Joseph all have a positive sustainable NPV under both scenarios. Traditional Main Streets (represented by Elgin and Bank at Glebe) and Mixed Use (represented by St. Joseph) have a particularly strong NPV compared to other street sections ($8.20, $5.51 and $10.64 respectively).
- Strandherd and Perth have a negative sustainable NPV if undertaken as a stand-alone project, and are only marginally positive if undertaken with other City works.
- Eagleson has a marginally positive sustainable NPV under both scenarios.

While not shown in the table, the results of the analysis indicate that for both scenarios, the biggest benefit criteria are:

- Reduction in number of power outages and cost-avoidance to non-residential customers;
- Intensification of redevelopment; and
- Value of improved streetscape aesthetics to non-residential customers.

In contrast, other categories of benefits are very small with only a few exceptions that relate to the value of increased streetscape aesthetics to residential customers on some of the street sections.

When looking at the costs of undergrounding, the analysis shows that the single biggest cost criteria is, not surprisingly, the initial capital cost of construction/installation which accounts for nearly all of the total costs. Other costs are relatively small. When done in conjunction with other street work, the costs of undergrounding are somewhat smaller than the costs for stand-alone projects, with the difference due to the avoidance of street reinstatement costs and travel disruption costs.

Based on the cost-benefit analysis, streets with a high potential for strong benefits have one or more of the following characteristics:

- Significant potential for redevelopment as manifested by a large number of redevelopment properties (or properties slated and designated as potential redevelopment properties);
- Space limitations on the street section as manifested by a relatively small size of the redevelopment properties, and in particular a relatively small depth of those properties; and
- Large number of existing businesses, commercial or non-commercial/industrial establishments.

The above characteristics are likely to lead to high redevelopment benefits (due to a relatively large increase in the amount of space that could effectively be built up by residential units) and high benefits due to more reliable power supply.

Review of Potential Funding Options

In parallel with the cost-benefit modeling, work was also undertaken to identify the range of funding options that are either available now, not available, or could be available if certain conditions were met. It is important to note that these funding options do not address the *willingness* or *capacity* to pay, only whether there is a financial mechanism to do so.
A total of fourteen options were identified. A summary of the funding options is attached as Document 3 which outlines the type of funding option; who would pay; whether the option is

currently available for either “retrofit” or “greenfield” locations; what would be required to use the option; and if available, an example of where the option has been used.

Options Not Available

A number of options that were identified as being available in the past to support undergrounding activity are no longer possible as the Ontario legislative environment would not permit their use today. Examples of these funding options include a specific levy within a *municipal development charge* fee for the cost of burying overhead wires (#1); and those options where Hydro Ottawa would pay for the conversion or retro-fitting of overhead wires to underground wires or for new Greenfield underground wire construction (#11 and #12).

In the case of Hydro Ottawa, the *Ontario Energy Board Act*, which governs local power utilities, explicitly outlines that these entities cannot increase rates amongst its ratepayers, or collect any levies or development charges from a requestor interested in burying wires along their properties, for the purposes of funding burial of overhead lines. Therefore, when a request is made to Hydro Ottawa, the requester must pay 100 per cent of the costs, as per the terms set out in Hydro Ottawa’s Conditions of Service.

Available Options

Three of the funding options involve using provisions under the *Planning Act*, as part of a Community Improvement Plan (#4) or under the *Municipal Act* to provide either financial assistance to encourage the undergrounding as part of a development grant application or through the use of a special service levy applied against all benefitting properties in a petition area (Local Improvement Charge) to pay for the project undergrounding costs (#3, #5).

Some of the funding options identify third parties being directly responsible for undergrounding. Three include developers (Greenfield and retrofit locations) paying (# 5, #6) and in a limited way, Hydro Ottawa Ltd. for system rebuild at the end of asset life of overhead wires in very limited circumstances (#13).

A range of four options involve the City paying for the undergrounding funded through property taxes, either directly or through city-wide capital reserves (#7, #8); through the use of the Hydro Ottawa Ltd. Dividend (#9); or through cost-sharing with other funding parties (#10).

The final option identifies the possible opportunistic use of Federal or Provincial grants or loans if and when they become available (#14).

It is important to note that many of the options could involve the City being a co-shared funding partner even though only one option is identified as such.

During the course of the financial review, staff was unable to identify a City of Ottawa funding source that would be considered ‘new’ and that therefore could be used without impacting either general property tax rates or other City funding priorities.

Capacity of the City to Fund Underground Wiring

While there are a number of financial tools that are available for the City to support the burial of overhead wires, the *capacity* of the City to fund this activity also needs to be considered. As previously mentioned, the cost to bury overhead wires is very expensive.

For example, the estimated capital cost to bury overhead wires on the sample streets chosen for this study is approximately $100M. This cost does not include additional costs for abutting property owners and third parties such as telecommunication providers.

Even if the City considered only the streets with a strong sustainable NPV (e.g. Elgin, Bank at Glebe and St. Joseph) the cost would still be more than $18M. This estimate does not include other streets within the traditional main street designation or mixed use areas that still have overhead wires.

Street Segment Name	Estimated Total Cost ($)	Length of Street Section (km)	Estimated (Initial) Capital Cost, With Other Street Work, $/km
Metcalfe	$6,930,000	0.95	$7,295,000.
Elgin	$5,766,000	0.912	$6,322,000.
Bank @ Glebe	$11,190,000	1.77	$6,322,000.
Bank St. S	$43,964,000	6.62	$6,640,000.
St. Joseph	$1,150,000	0.35	$3,290,000.
Strandherd	$4,478,000	1.17	$3,830,000.
Eagleson	$23,347,000	6.10	$3,830,000.
Perth	$3,071,000	1.43	$2,150,000.
Total	$99,896,000	19.300	N/A

The cost of undergrounding should also be considered in the context of the City's ability to meet its existing infrastructure renewal needs and other funding priorities. For example, over 20 per cent of roads are in need of resurfacing or reconstruction and the annual budget typically allows less than two per cent of these needs to be addressed. Without a new source of funding, adding the cost of hydro burial would further impact the City's ability to plan and carry out infrastructure renewal projects in a timely manner or fund other City Capital and service delivery priorities.

Given the high cost associated with undergrounding, the on-going challenge to meet current infrastructure renewal needs and other funding priorities, and in the absence of any new City funding source, it is recommended that the City should only consider the burial of overhead wires when the full cost is paid for by the requesting party.

Implications for City Planning Policy

Consistent with the Provincial Policy Statement (PPS) issued under the *Planning Act*, the City's Official Plan identifies a minimum overall intensification target and has designated Intensification Target Areas to accommodate projected intensification. Several of the target areas include Traditional and Arterial Mainstreets and Mixed-Use Centres, with existing overhead power lines and poles.

As per provincial regulations, Hydro Ottawa requires a five-metre setback between new buildings and overhead wires. In many target areas, this setback requirement, when combined with a smaller lot fabric, often makes it difficult for developers to meet the City's intensification goals and urban design objectives.

While the City will not be actively removing overhead wires, it is not expected to have a significant impact on the City's ability to meet its intensification targets. The City will continue to work with developers and other interested parties to encourage the undergrounding of overhead wires.

RURAL IMPLICATIONS

As in the urban area, the undergrounding of overhead wires in the rural area will be undertaken only when the full cost of burial is paid for by the requesting party.

CONSULTATION

The project steering committee, comprised of five City Councillors, development industry representatives, Hydro Ottawa staff and City staff has been consulted during this project.

A meeting with Bell Canada representatives was also held to discuss the project.

Further public consultation has not been undertaken to date given the very high cost of burial and the recommendation being made.

COMMENTS BY THE WARD COUNCILLORS

The Councillors on the project steering committee (Councillors Bloess, Harder, Holmes, Monette and Qadri) appreciate the work completed in this review and while we are disappointed that no alternate funding source could be identified and that a pilot project couldn't be completed we are realistic in understanding the high cost of underground wiring and the City's limited financial resources.

LEGAL/RISK MANAGEMENT IMPLICATIONS

There are no legal/risk management impediments to implementing the recommendations in this report.

CITY STRATEGIC PLAN

This initiative is aligned with both the *Planning and Growth Management* priority and *Sustainable Finances* priority.

TECHNICAL IMPLICATIONS

N/A

FINANCIAL IMPLICATIONS

The report recommends that undergrounding of overhead wires on City right-of-ways be undertaken only when the full cost of burial is paid for by the requesting party. If Planning Committee and Council approve this recommendation, there is no financial impact on the City.

SUPPORTING DOCUMENTATION

Document 1 – Underground Wiring Policy – Project Steering Committee Members
Document 2 – HDR Corporation Results of Cost-Benefit Modeling – Executive Summary
Document 3 – Summary of Funding Options

DISPOSITION

Subject to approval of this report, Infrastructure Services and Community Sustainability staff in consultation with the appropriate electrical distributor (Hydro Ottawa or Hydro One) will report back to Planning Committee on the intake process developed to consider requests for burial from interested property owners.

DOCUMENT 1

UNDERGROUND WIRING POLICY – PROJECT STEERING COMMITTEE MEMBERS

Underground Wiring Policy – Project Steering Committee

Updated 30 Sep 2010

Name	Organization
City Councillors	
Councillor Jan Harder (Chair)	City of Ottawa
Councillor Rainer Bloess	City of Ottawa
Councillor Diane Holmes	City of Ottawa
Councillor Bob Monette	City of Ottawa
Councillor Shad Qadri	City of Ottawa
City Staff	
John Moser,General Manager Planning and Growth Mgmt.	City of Ottawa
Alain Gonthier, Manager Asset Management	City of Ottawa
Michael Murr, Manager Sustainability Plan. and Dev.	City of Ottawa
Development Industry	
Ian Donnelly Director	Brookfield Properties
Cal Kirkpatrick Vice President	Colonnade Development
Jack Stirling Vice President	Minto
Hydro Ottawa	
Rosemarie Leclaire President and CEO	Hydro Ottawa
Norm Fraser Chief Operating Officer	Hydro Ottawa

Technical Committee

Linda Carkner Program Manager	Utility Develop Co-ordinator
Casey Malone	Hydro Ottawa

DOCUMENT 2

HDR CORPORATION RESULTS OF COST-BENEFIT MODELING – EXECUTIVE SUMMARY

HDR

ONE COMPANY | *Many Solutions*℠

City of Ottawa

Underground Wiring Policy: Cost-Benefit Analysis Framework

Executive Summary

Prepared by:

HDR Corporation

March 11, 2011

HDR | HLB Decision Economics Inc.

Risk Analysis · Investment and Finance
Economics and Policy

EXECUTIVE SUMMARY

HDR Corporation has been engaged by the City of Ottawa to develop a cost-benefit analysis framework for the burial of overhead wires and illustrate its application on a set of sample streets that are considered to be representative of the main street categories in Ottawa.

METHODOLOGY

The cost-benefit analysis uses a *sustainable return on investment* (SROI) framework to evaluate a wide spectrum of benefits and costs of an investment project over the investment life cycle. The principal output of the analysis is the Net Present Value (NPV), which represents the present value of total benefits minus present value of total costs. Other frequently used evaluation metrics derived from the values of costs and benefits include rate of return over project life, average annual rate of return, internal rate of return, cost-benefit ratio, and discounted payback period.

In this cost-benefit framework, all costs and benefits were classified as either: (1) "Financial", or (2) "Sustainable". A financial benefit or cost is an impact that results in an immediate flow of cash (either positive or negative) to an affected stakeholder. A sustainable cost or benefit is an effect that captures broader impacts attributable to a project, including welfare and other non-financial impacts on organizations, people, and the environment. A "sustainable" impact is thus an impact that includes all effects that would be considered important for sustainable communities and is consistent with the concept of sustainability. Such impacts can be quantified and monetized using additional assumptions and methodological approaches

This classification of costs and benefits leads to two sets of results and evaluation metrics. The metrics corresponding to the first category of costs and benefits are referred to as *financial return on investment*, and the metrics corresponding to the combined first and second category of costs and benefits are referred to as *sustainable return on investment*, or SROI.

The benefits of burying overhead wires that were identified, quantified, monetized and taken into account in the cost-benefit analysis framework include the following:

- Improved streetscape aesthetics for residents and businesses due to removal of unsightly overhead wires;
- Reduction in tree trimming costs to accommodate the wires;
- Reduction in number of outages and improvement in reliability of power supply to residential and non-residential customers;
- Intensification of redevelopment due the removal of safety set back requirements and increase in lot area that can effectively be built up; and
- Reduction in service restoration costs following major events (storms).

The costs of undergrounding that were identified and taken into account include the following:

- Initial capital costs of construction/installation of underground wiring (adjusted for avoidance of future renewal costs of overhead wiring);
- Travel time disruption costs during construction when traffic is obstructed;
- Additional operation and maintenance costs;
- Additional utility easement requirements and rental space for utility vaults inside buildings for installation of various equipment;
- Installation of dedicated street lights, traffic lights, signage that is necessary when utility poles supporting street lights and signage are removed, and
- Additional mapping and graphing of underground utilities.

The above analysis was implemented for a sample of streets considered to be representative of the main street types and profiles in Ottawa. The specific streets analyzed included the following (classified by category):[3][3]

- Central Area: Metcalfe Street (Isabella St to Nepean St)
- Traditional Main Streets:
  - Elgin Street (Lisgar Street to Catherine Street)
  - Bank St (McLeod St to Rideau Canal)
- Arterial Main Streets: Bank Street (Rideau Canal to Queensdale Ave)
- Mixed Use/Town Centre/Suburban Arterial:
  - St. Joseph Boulevard (Belcourt Boulevard to Maisonneuve)
  - Strandherd Drive (Jockvale Road to Longfields Drive)
  - Eagleson Road (Queensway to Terry Fox Drive)
- Rural Village: Perth Street (Lundys Lane to Rochelle Drive), Richmond Village.

The cost-benefit model was estimated over a period of 31 years.[4][4] Uncertainty as to the values of various inputs to the cost-benefit model is accounted for using risk analysis techniques which take explicitly into account probability distribution of model inputs. In its essence, the risk analysis process involves an analysis and assumptions regarding the probability distribution of each uncertain model input (its average value, standard deviation, minimum, maximum, degree of skeweness, etc.) based on all available information. The final model outcomes are produced with traditional mean values as well as ranges of the corresponding probability distribution.

Two model scenarios were considered explicitly: (1) undergrounding as a stand-alone project, and (2) undergrounding in combination with other street work. The specific data for the various cost and benefit inputs was provided by Hydro Ottawa and various departments in the City of Ottawa. All future costs and benefits were discounted at an annual real discount rate of 5%.

RESULTS

The outcomes of the cost-benefit analysis for the two scenarios evaluated with the various evaluation metrics are shown in Summary Table 1 and Summary Table 2 below. The upper

[3][3] New and residential streets were not studied.

[4][4] The analysis period of 31 years selected for this cost-benefit model is based on the typical life of underground wiring systems (estimated to be about 30 years) extended by one year that accounts for preliminary planning, design, and coordination that takes place in the first year of construction before the actual road work and electrical engineering work start.

section in each table shows the results for financial costs and benefits, or *financial return on investment* metrics. The bottom section in each table shows the results for the combined financial and sustainable costs and benefits, or *sustainable return on investment* (SROI) metrics.

The tables demonstrate that based only on financial benefits and costs undergrounding of overhead power lines cannot be justified, either as a stand-alone project or in combination with other street work. This can be seen in the negative net present value for all street sections and poor outcomes for other metrics. Including sustainable benefits and costs in the accounting of costs and benefits justifies projects for some streets. Specifically, the tables show the following:

- Metcalfe, Elgin, Bank and Glebe, Bank Street, and St. Joseph all have a positive sustainable NPV under both the scenarios considered.
- Strandherd and Perth have a negative sustainable NPV under the stand-alone project scenario and are marginally positive under the second scenario.
- Eagleson has a marginally positive sustainable NPV under both scenarios.

Among the streets that have a positive sustainable NPV, the table demonstrates the following:

- The two street sections in the Traditional Main Streets category and St. Joseph (in the Mixed Use category) have a particularly strong NPV compared to other street sections, strong rate of return over project life, strong average annual rate of return, and a relatively fast payback period.
- The other streets with a positive NPV have a somewhat lower rate of return and a longer payback period.

The results of the analysis also show that for both scenarios considered the biggest benefit categories are:

- Reduction in number of outages and cost-avoidance to non-residential customers;
- Intensification of redevelopment; and
- Value of improved aesthetics to non-residential customers.

In contrast, other categories of benefits are very small with only a few exceptions that entail the value of increased aesthetics to residential customers on some of the street sections.

Regarding costs of undergrounding, the analysis shows that the single biggest cost category is the initial capital cost which accounts for nearly all or most of the total costs of undergrounding projects. Other costs are relatively small. Costs of undergrounding conducted with other street work are somewhat smaller than the costs for stand-alone projects with the difference due avoidance of street reinstatement costs and the travel disruption costs.

Summary Table 1: Cost-Benefit Analysis Outcomes, Undergrounding as a Stand Alone Project

Evaluation Metrics	Central Area	Traditional Main Streets		Arterial Main Streets	Mixed Use/ Town Centre/ Suburban Arterial			Rural Village
	Metcalfe	Elgin	Bank @Glebe	Bank St. South	St. Joseph	Strandherd	Eagleson	Perth
Stand Alone Undergrounding - FINANCIAL ROI								
Total Net Present Value, NPV, $M	-$6.68	-$5.84	-$10.95	-$36.60	-$1.33	-$4.72	-$19.33	-$3.14
Net Present Value per km, NPV per km, $M	-$7.03	-$6.40	-$6.19	-$5.53	-$3.80	-$4.03	-$3.17	-$2.19
Rate of Return over Project Life, %	-99.8%	-99.9%	-100.0%	-99.9%	-99.9%	-99.6%	-99.9%	-99.8%
Average Annual Rate of Return, Post-Construction, %	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
Internal Rate of Return, %	NA	NA	NA	NA	NA	NA	NA	NA
Benefit-Cost Ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Discounted Payback Period, Years	NA	NA	NA	NA	NA	NA	NA	NA
Stand Alone Undergrounding - SUSTAINABLE ROI								
Total Net Present Value, NPV, $M	$0.89	**$6.74**	**$8.63**	$15.84	$3.34	-$0.41	$0.45	-$0.11
Net Present Value per km, NPV per km, $M	$0.94	**$7.39**	**$4.88**	$2.39	$9.54	-$0.35	$0.07	-$0.08
Rate of Return over Project Life, %	13.2%	**113.0%**	**77.3%**	40.5%	218.4%	-8.7%	2.3%	-3.2%
Average Annual Rate of Return, Post-Construction, %	6.1%	**10.6%**	**8.7%**	8.1%	14.2%	4.2%	4.8%	5.3%
Internal Rate of Return, %	6.9%	**30.1%**	**21.3%**	10.4%	68.9%	3.2%	5.5%	4.6%
Benefit-Cost Ratio	1.1	**2.1**	**1.8**	1.4	3.2	0.9	1.0	1.0
Discounted Payback Period, Years	19.2	**4.1**	**4.3**	9.1	3.6	30.1	15.1	28.1

Summary Table 1: Cost-Benefit Analysis Outcomes, Undergrounding in Combination with Other Street Work

Evaluation Metrics	Central Area	Traditional Main Streets		Arterial Main Streets	Mixed Use/ Town Centre/ Suburban Arterial			Rural Village
	Metcalfe	Elgin	Bank @Glebe	Bank St. South	St. Joseph	Strandherd	Eagleson	Perth
Undergrounding with Other Work - FINANCIAL ROI								
Total Net Present Value, NPV, $M	-$6.15	-$5.10	-$9.83	-$32.19	-$1.00	-$3.84	-$18.22	-$2.46
Net Present Value per km, NPV per km, $M	-$6.47	-$5.60	-$5.55	-$4.86	-$2.85	-$3.28	-$2.99	-$1.72
Rate of Return over Project Life, %	-99.8%	-99.9%	-100.0%	-99.9%	-99.9%	-99.5%	-99.9%	-99.8%
Average Annual Rate of Return, Post-Construction, %	0.0%	0.0%	0.1%	0.3%	0.2%	0.2%	0.2%	0.3%
Internal Rate of Return, %	NA	NA	NA	NA	NA	NA	NA	NA
Benefit-Cost Ratio	0.002	0.001	0.000	0.001	0.001	0.005	0.001	0.002
Discounted Payback Period, Years	NA	NA	NA	NA	NA	NA	NA	NA
Undergrounding with Other Work - SUSTAINABLE ROI								
Total Net Present Value, NPV, $M	$1.42	**$7.47**	**$9.75**	$20.26	$3.72	$0.47	$1.57	$0.56
Net Present Value per km, NPV per km, $M	$1.50	**$8.20**	**$5.51**	$3.06	$10.64	$0.40	$0.26	$0.39
Rate of Return over Project Life, %	22.9%	**143.0%**	**97.0%**	58.4%	325.5%	12.0%	8.4%	19.9%
Average Annual Rate of Return, Post-Construction, %	6.6%	**12.0%**	**9.7%**	9.1%	18.5%	5.1%	5.1%	6.4%
Internal Rate of Return, %	8.4%	**37.7%**	**26.2%**	12.4%	93.8%	7.4%	6.8%	7.3%
Benefit-Cost Ratio	1.2	**2.4**	**2.0**	1.6	4.3	1.1	1.1	1.2
Discounted Payback Period, Years	15.1	**4.0**	**4.2**	9.0	3.5	14.6	14.6	15.7

CONCLUSIONS AND RECOMMENDATIONS

The cost-benefit analysis conducted leads to the following general conclusions:

- Based only on financial costs and benefits, undergrounding of overhead power lines cannot be justified, whether undertaken as a stand-alone project or in conjunction with other City works.
- Including sustainable, or socio-economic, costs and benefits in the cost-benefit analysis justifies undergrounding projects in some cases.
- Analysis of sustainable benefits and costs helps in street ranking, or identification of streets with a high potential for overall beneficial outcomes. Streets with a high potential for strong benefits have one or more of the following characteristics:
  - Significant potential for redevelopment as manifested by a large number of redevelopment properties (or properties slated and designated as potential redevelopment properties);
  - Space limitations on the street section as manifested by a relatively small size of the redevelopment properties, and in particular a relatively small depth of those properties, and
  - Large number of existing businesses, commercial or non-commercial/industrial establishments.
- The above characteristics are likely to lead to high redevelopment benefits (due to a relatively large increase in the amount of space that could effectively be built up by residential units) and high benefits due to more reliable power supply.

The above analysis leads then to the following recommendations:

- Each street contemplated for an undergrounding project should be assessed separately using the cost-benefit analysis framework developed in this engagement as each street appears to represent its own unique case.
- In the situation of time or budgetary limitations, certain prioritization of undergrounding projects could also be considered: Traditional Main Streets should be recommended as first priority followed by streets within Mixed Use Centres.

SUMMARY TABLE OF FUNDING OPTIONS

DOCUMENT 3

	Funding Option	Description	Who Pays?	Currently Permitted?	Currently Permitted?	What would be required to use?	Example
				Greenfield	Retrofit		
1.	Municipal Development Charges	A specific levy within the development charge fee for the cost of burying overhead power lines	Developer as part of a development application generally at time of building permit	No	No	The development-related cost of electrical substations, distribution system and rolling stock is no longer eligible for development charge recovery. Bill 35, which received Royal Assent on October 30, 1998, required restructuring of municipal hydro utilities to business corporations within two years of proclamation (November 7, 1998). Since this has occurred, neither the new municipal electrical corporation, nor the municipality on its behalf can levy a development charge for this purpose, primarily because the new corporation is not a "local board," under any Act.	Was available prior to changes to *Electricity Act*
2.	Special Services Levy	Imposition of a special service levy to properties within a benefitting area	Initially funded from City debt but repaid through the special service levy against all properties in benefitting area	Yes	Yes	Available under Section 326 of the *Municipal Act.* Requires approval by Council	Burying of Hydro Lines on Kanata Avenue approved by Council May 25, 2010
3.	Local improvement charge	Levy a local improvement charge (LIC) for specified works (which can include electrical buried conduit and wires), generally on the basis of metres of frontage though can be by zone/lot assessment or a combination thereof.	Initially funded from City but repaid through a levy against benefitting properties in the petition area.	Yes	Yes	Available under Part XII (Section 400) of the *Municipal Act* & O. Reg. 586/06. Implementation of a LIC requires approval of the majority of benefitting property owners. To be successful a petition requires support of two thirds of the property owners representing 50% of the value of all lands in the petition area.	Former City of Nepean used an LIC for the Carleton Industrial Park for street lighting and Hydro installation. Manotick sanitary sewer installation program used a LIC. Approved by Council April 23, 2008
4.	Community Improvement Plan	Once a CIP has been approved for a CIP project area allows City to offer	City though direct grants or loans or	No	Yes	Available under Section 28 of the *Planning Act.* Requires approval by Council.	Development Incentive Grant Program offered

		grants or loans to property owners to assist with improvement activities in the project area to encourage redevelopment, rehabilitation of land and buildings and improvements to works which could burying of overhead wires.	through property tax rebates (TIEG) based on tax increment equivalent financing[5[5]]				within the St. Joseph Blvd CIP, adopted by City Council Jan 28, 2009. Eligible costs can include burial of hydro service on and off-site.
5.	Developer Pays-*Greenfield* - initial construction as part of subdivision	Compel developer to pay for the cost of burying wires at time of construction of subdivision for the burial of wires **outside** of internal subdivision roads which would include to the site and along collector/arterial roads.	Developer	No policy established		Establish a policy and implementation strategy which could include changes to the subdivision approval process and the establishment of a site-specific private proponent cost sharing & recovery program.	
6.	Developer Pays-*Retrofit*- as part of redevelopment project	Compel developer to pay for the cost of burying wires at time of construction	Developer	No policy established		Establish a policy and implementation strategy. Note that some developers do undertake the burial of wires voluntarily as a selling feature of the project (aesthetics) or due to technical limitations posed by overhead wires to the building design and location on infill sites. The benefits are project & site- specific and do not address broader community regarding burial of overhead wires.	Bank Street at Gladstone Avenue. Central I and II (Urban Capital) project includes burial of wires.
7.	City Pays-capital project-financed *directly* through property taxes	City would budget and pay for burial of wires as a capital project part of an infrastructure renewal initiative. An increase in taxation to cover the funding for the wiring.	City	No policy established		Develop a Council policy and long-term Implementation Strategy	

[5[5]] A Tax increment equivalent grant (TIEG) is a grant equal to the full amount or a portion of the amount of the estimated property tax increase after the property is redeveloped.

8.	City Pays-capital project-financed through use of City-Wide Capital Reserves	City would budget and pay for burial of wires as a capital project part of an infrastructure renewal initiative. Use a portion of the existing contribution base to fund this new requirement (effectively, less funds available for normal capital rehab/growth program)	City	No policy established	Develop a Council policy and long-term Implementation Strategy. This option is essentially the same as the property tax option. A portion of the property tax gets contributed to the capital reserve fund and then gets used to fund capital projects.	
9.	City Pays-capital project-financed through use of dividends collected from Hydro Ottawa Ltd.	City would budget and pay for burial of wires as a capital project part of an infrastructure renewal initiative	City using Hydro Ottawa Ltd. dividends	No policy established	Develop a Council policy and long-term Implementation Strategy. Currently the City uses the Hydro dividends as a general revenue to reduce the amount raised from property taxes. Using the dividends as a funding source for underground wiring purposes would create a tax pressure. If the amount of the dividend were increased to cover these projects, the Ontario Energy Board and interveners would probably notice it thorough Hydro's rate filing and request to stop such funding allocation.	.
10.	City cost-shares with other interested funding parties	City would share in the wire burial costs with third party funding sources such as BIA/Developer(s)/others/ /Hydro Ottawa?	City and other funding participants in the program to bury wires	No policy established	Develop a Council policy and long-term Implementation Strategy	U. of Ottawa and the former City of Ottawa cost-shared some of the burial costs within the campus c.1984
11.	Hydro Ottawa Ltd. Pays - *Greenfields*	Hydro would pay for the new underground construction outside of the internal subdivision.	Hydro Ottawa	Not supported by Hydro Ottawa's technical standards and distribution system operating codes under the *Electricity Act* and the *Ontario Energy Board Act* and with Ontario Energy Board's regulated rate structure regime.	Changes to the *Ontario Energy Board Act* and maybe to the *Electricity Act*	

12.	Hydro Ottawa Ltd. Pays-*Retrofit*	Hydro would pay for the conversion from overhead to underground construction in existing built-up areas.	Hydro Ottawa	Not supported by Hydro Ottawa's technical standards and distribution system operating codes under the *Electricity Act* and the *Ontario Energy Board Act* and with Ontario Energy Board's regulated rate structure regime.	Changes to the *Ontario Energy Board Act* and maybe to the *Electricity Act*	
13.	Hydro Ottawa Ltd. Pays-*System Rebuild at end of asset life*	Apply Hydro Ottawa overhead system rebuild funding (end of asset life within the next 10 years) for that specific street to the underground conversion project.	Hydro Ottawa	No policy established.	?	
14.	Senior Levels of Government-Special Funding (grants or loans)	Time to time special funding and loan programs offered to encourage infrastructure renewal and/or provide an economic stimulus	Government of Canada Province of Ontario	Grants not currently available. Loans may be available from Infrastructure Ontario to eligible municipalities and municipal corporations which could include costs for burial of wires.	Grant funding is unpredictable and may not include the burial of electrical wires. Difficult to develop an implementation plan in the abstract. Would have to be prepared for the possibility and be opportunistic. Requires Council to endorse a strategy in the context of possible competing infrastructure priorities. May still require residual funding from the City or repayment if in the form of a loan.	Federal and Provincial Infrastructure Stimulus Fund (2009)~ though burial of wires was not an eligible project under this program. Infrastructure Ontario loans to municipalities and municipal corporations (Hydro Ottawa?) can include burial of wires.

Michael Murr, Manager of Sustainability Planning and Development was present in support of the staff report. He was accompanied by Stephane Larocque of HDR Corporation, the firm that prepared the cost-benefit analysis framework, and by Casey Malone, Manager of Distribution Design for Hydro Ottawa

In response to questions from Councillor Chernushenko, Mr. Murr explained that the cost-benefit analysis showed there was no financial case for the City to invest in the burial of wires based on the direct financial return the City, and the costs to do so were not affordable relative to the demands on the City. For that reason, staff recommended that burial of wires would need to be paid by the requestor or other parties.

Councillor Chernushenko referenced a specific project in his ward, the upcoming rehabilitation of Bank Street in the Glebe. He noted that area's residents had supported waiting longer to undergo the rehabilitation on the assumption that the wires could be buried if they waited; however, they were now being told that this would only happen if the Community itself paid for it. The Councillor expressed concern that the community, social and aesthetic benefits of burying wires were being dismissed due to the difficulty of putting a financial value on those benefits. He wondered how those benefits were valued in the analysis.

Mr. Murr explained that the project steering committee had undergone a process to identify a range of factors that would be considered in the cost-benefit analysis. Those factors chosen were intended to best represent the economic costs and benefits, and included those costs and benefits accruing to the City and/or Hydro Ottawa as well as those that would accrue to the broader community. He explained that HDR, working with staff, had come up with ways to measure the social, environmental and aesthetic values.

Mr. Larocque concurred that burial projects did not have a payoff to the City or Hydro Ottawa from a financial perspective, but when the social and environmental benefits are factored in there was a positive payoff identified for designated main streets such as Bank Street. He did note, however, that aesthetics did not have a high value payoff, based on third-party studies of how people value aesthetics. The biggest value impacts were where the burial of wires could allow for greater opportunity for development, such as on a space-constrained street where burial would allow for greater and densification.

Councillor Chernushenko noted that although the report stated a case for burial of wires on designated main streets, it recommends that the local communities would have to raise the money due to the costliness of burial. He was concerned that the City was beginning to "levy-ize" the way politics was done by asking the immediate community to raise the money for things the City should be doing and has itself identified as being of value.

Councillor Harder highlighted the financial pressures the City was under. She noted as an example the delays in resurfacing for several streets in Barrhaven due to budget constraints, a concern that went beyond aesthetics.

Councillor Monette congratulated the steering Committee and staff for their work on this issue. While he would have preferred a different outcome, he appreciated the financial constraints on the City. Following on the questions from Councillor Chernushenko, he wanted to know if approving this report meant that the City would never consider paying for burying wires in the future. Mr. Murr suggested the report meant that, for the time being, there is an inability for the City to pay for burial. He suggested that Council could perhaps revisit the issue in the future should new information come forward or new sources of revenue become available. Councillor Monette suggested that the City should keep an open mind and not limit its ability to take advantage of opportunity that may come up to bury wires in certain areas. He cited areas in his ward, St. Joseph Boulevard specifically, that would benefit from burial.

Councillor Monette wondered if staff had looked at the possibility of having developers pay for burial of wires as one of the conditions to fulfill when they locate on a street. Mr. Murr explained that currently it is up to developers to choose whether they will pay for burial or not, and some have where it has made sense for the economics of their site development. He suggested one caution in formalizing that requirement was the fact that the requirements are dependent on the site, and there are considerations that need to be assessed to determine whether it is possible to bury wires within a particular part of a street.

Mr. Murr indicated that the City could continue to work with neighbourhoods, community associations and Business Improvement Areas (BIAs) and Hydro Ottawa to explore opportunities to streamline the electrical overhead, in lieu of burial, at a lower cost to the community. He noted that the other factor to consider was the range of other investments the City can make to the right-of-way as part of a rehabilitation program, such as upgrading the sidewalks, landscaping, lighting and street furniture. While this may not completely offset the fact that the poles and wires are still above ground, he suggested it would go a long way to improving the aesthetics and viability of a street.

Councillor Harder noted that the BIAs had been asked for their comment and had indicated that, of all the potential works on their wish lists, burial of the wires was not in the top five items. Rather, there are other investments they feel might be of

more value, such as those that draw attention at eye level where businesses are located.

Councillor Blais expressed concern that the second recommendation of the staff report was redundant and could tie Council's hands by making a Council policy. He noted that Council sets its capital priorities each year, and although burial of wires was not a capital priority this year, it may be in future years for some areas. He recommended removal of the recommendation two, as he felt Council should have the ability to consider burial in future years if it is a priority and not be told it is against their policy.

Mr. Murr suggested the benefit of approving the second recommendation was that it would make the City's position clear to all parties, including communities and developers. He noted that there have been some unrealized expectations in communities that the City would be able to bury wires, as well as cases of developers requesting that the City to pay for burial for a particular development.

Councillor Blais suggested that without Council having gone through its long-range capital planning exercise, the second recommendation was premature. He felt it should be deferred until such an exercise took place, or deleted completely.

Councillor Blais asked whether the City had done an analysis of the wires along the corridors in question to see if all of them were active. Mr. Malone from Hydro Ottawa explained that the Electrical Safety Authority requires that all Hydro services in Ontario remove unused wires unless they are for backup or future use. With respect to telecom wires, Hydro Ottawa's agreements with the telecom companies require that those companies annually review, declare and remove any wires not in use. He suggested there was a possibility of cleaning up streetlight wires that run off a relay system, which would have a financial impact on the City. He explained that enforcement of the telecom wire cleanup is the combined responsibility of Hydro Ottawa and the City. There was nobody present from Public Works to provide information on the City's enforcement actions.
Councillor Blais suggested another reason to delete the second recommendation was the inability to answer questions about the fundamental nature of the wires in questions and the issue of enforcing the removal of dead wires.

Mr. Malone added that Hydro Ottawa had unofficially withheld new applications for telecoms on the designated main streets since amalgamation. He suggested that if an area were to be designated as allowing for no new installations, there could be a challenge from the telecom companies to the Canadian Radio-television and Telecommunications Commission (CRTC.)

On this point, Hana Nader-Merhi, Legal Counsel, suggested there were a number of factors that would need to be considered before one could designate any area as not allowing for new installations, noting the City has certain municipal access agreements in place.

Councillor Blais pointed out that the City had paid to put conduits under St. Joseph Boulevard to allow for future burial of wires, estimating it had cost several hundred thousand dollars. He expressed concern with coming forward to that community with a policy stating the wires would never be buried, given they had spend the funds to put in those conduits and the community's expectations had been raised. He indicated that he would not support the report unless the second recommendation was removed.

In response to questions from Councillor Harder, Ms. Nader-Merhi indicated that the report recommendations as presented would indeed set a policy for Council. She suggested that the second recommendation could be amended to add the words "…or as otherwise approved by Council on a case-by-case basis." This would allow the general rule to be followed, with exceptions as approved by Council. Councillor Blais indicated that he would move this as an amendment.

Councillor Qadri asked if all types of Hydro lines could be buried. Mr. Malone explained that it was technically possible to bury all types of Hydro lines; however, there were technical and safety constraints and the cost would increase exponentially as the voltage of the wires increased. Aside from the financial issues, beyond a certain voltage there would be a requirement for further review and development of standards in order to make it feasible.

Councillor Chernushenko inquired about the possibility of installing the required infrastructure during the reconstruction of a road in order to allow for burial of wires in the future. Mr. Malone explained that construction of the underground work in advance accounted for approximately 60 per cent of the total cost of burial. He noted that for Bank Street in the Glebe, there were also challenges with respect to timing of works and traffic flow when trying to do a number of activities in a small area.

In response to further questions from Councillor Chernushenko with respect to other things that could be done, short of burial, to minimize the visual impact of the wires, Mr. Malone indicated that there were various levels of improvements that could be done to improve the look of the overhead system. He noted that the Canadian Electrical Association published a report about overhead aesthetics addressing that very issue. As to whether it could be done as a matter of course, there would need to be a discussion between the City and telecom providers, and he suggested the telecom providers may seek funding in order to make changes unless there are existing legal agreements in place.

Councillor Harder thanked staff and the steering Committee for their work on the report. Acknowledging that burial of wires was something that everyone wanted to see happen, she pointed to Merivale Road as an example of where the look of a street has been improved over the years through better planning even though the wires were not buried.

Moved by Councillor S. Blais:

That recommendation two of the staff report be amended by adding the following: "…or as otherwise approved by Council on a case-by-case basis."

CARRIED

That Planning Committee recommend Council:

1. **Receive the report entitled Underground Wiring Policy: Cost-Benefit Analysis Framework as prepared by HDR Corporation, dated 11 March 2011, a copy of which is on file with the City Clerk; and**

2. **Direct that the undergrounding of overhead wires on City right-of-ways be undertaken only when the full cost of burial is paid for by the requesting party, or as otherwise approved by Council on a case-by-case basis.**

CARRIED, as amended