



ADMINISTRATIVE REPORT

Report Date: March 6, 2018
Contact: Doug Smith
Contact No.: 604.829.4308
RTS No.: 12443
VanRIMS No.: 08-2000-20
Meeting Date: March 14, 2018

TO: Standing Committee on City Finance and Services
FROM: General Manager of Planning, Urban Design and Sustainability
SUBJECT: Greater Vancouver INNOVATION CAPITAL

RECOMMENDATION

- A. THAT Council approve an increase of \$500,000 to the Vancouver Economic Commission's 2018 operating budget for the sole purpose of supporting the Greater Vancouver INNOVATION CAPITAL initiative and engaging TIR Consulting Group LLC for the development of a "Third Industrial Revolution infrastructure roadmap" for the region. The budget increase will be funded from the City of Vancouver Innovation Fund.
- B. THAT the release of the funds is subject to the Vancouver Economic Commission securing additional funds from third-parties targeting a 3:1 ratio, and contingent on the funds being deployed by the end of 2019, or returned to the City of Vancouver Innovation Fund.
- C. THAT Council direct Staff to review all third-party funding support for this initiative, ensure the source of funds complies with City policy, and provide consent to funding offers before they are accepted by the Vancouver Economic Commission.
- D. THAT Council direct staff to ensure all City of Vancouver procurement policies and best practices are followed in this sole source procurement.

REPORT SUMMARY

This report summarizes a proposal from TIR Consulting Group, led by Jeremy Rifkin, to engage with the Vancouver Economic Commission on the development of a Third Industrial Revolution infrastructure roadmap for the City of Vancouver and the region. The report also outlines the funding strategy and the justification to seek \$500,000 from the City of Vancouver Innovation fund to support this initiative through the Vancouver Economic Commission's (VEC) operating budget.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In March 2011, Council accepted the Vancouver Regional Growth Strategy (RGS) entitled “Metro Vancouver 2040: Shaping our Future” with 5 regional goals:

1. Create a Compact Urban Area
2. Support a Sustainable Economy
3. Protect the Environment and Respond to Climate Change Impacts
4. Develop Complete Communities
5. Support Sustainable Transportation Choices

In September 2011, Council adopted the Vancouver Economic Action Strategy which includes supporting and promoting local innovation and innovators as well as developing the key sectors of digital entertainment, technology and sustainability-related sectors including cleantech and clean energy.

In 2011, the Vancouver Economic Commission published the first Vancouver Economic Action Strategy.

In 2012, Council established the City of Vancouver Innovation Fund to leverage funding and expertise from outside agencies to, among other priorities, enhance our local economy with an emphasis on social enterprise, particularly in the green sector.

In November 2015, Council approved the Renewable City Strategy, which sets the target for 100% of energy used within the City to be from renewable sources by 2050. The Renewable City Strategy emphasizes the need to capitalize on economic opportunities such as enabling technology innovation, attracting “green capital” to the region, and growing the clean tech sector.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

REPORT

Background/Context

Economic Context

Similar to the trend being observed in other western democracies, Vancouver is experiencing increasing inequality and decreasing affordability, which are threatening the City’s long-term economic viability and social fabric. Vancouver and the rest of Canada are also facing the real threats posed by climate change.

At the same time, we are on the cusp of a transformational shift in the ways we transport people and goods, communicate, and produce and consume energy that can pave the way for a prosperous, inclusive and low carbon economy within the Metro Vancouver region. This shift requires governments, businesses and academic institutions to rethink existing systems, infrastructure, education, business models, and policy in order to transition and capitalize on a fully digitized economy.

Vision

The First Industrial Revolution was marked by the adoption of coal as a fundamental energy source and steam-powered production and transportation. The Second Industrial Revolution, organized around the internal combustion engine, suburban construction and creation of a mass consumer society, is now coming to a close and the world is entering into a Third Industrial Revolution. This next phase of development will be enabled by high-capacity wireless communication, renewable energy, automated mobility and sensor technology embedded in physical assets and our built environment.

New smart infrastructure has the potential to alter the way Vancouver and the Metro Region manages and powers economic and social activity in a low-carbon society. The Government of Canada has announced an unprecedented \$100 billion investment in infrastructure over the next twelve years. With appropriate planning, this proposed infrastructure investment can support the transition from the second to the third Industrial Revolution economy and society.

All levels of government, private businesses, NGOs, non-profit foundations, communities and citizens are working towards solutions to revitalize the economy, address climate change, and create a more resilient society.

To support this vision, City staff proposes an investment of \$500,000 from the City of Vancouver Innovation Fund, contingent on the VEC securing \$1,500,000 from third party funders.

Unique Opportunity to Develop a Third Industrial Revolution Roadmap

The TIR Consulting Group's Global Sustainability Team has submitted a proposal to the VEC to join with the Vancouver business community and the City of Vancouver, and accompanying stakeholders, including educational institutions from across the metropolitan area, in the preparation of an initial roadmap for erecting a fully digitalized Third Industrial Revolution infrastructure and economy. Jeremy Rifkin, the principal at TIR Consulting Group, is proposing to leverage Vancouver's strong global sustainability brand and make the region a showcase for the Third Industrial Revolution Master Plan work in North America. This project would follow TIR Consulting Group's successful development of a Master Plan for Rotterdam and the Hague. To capitalize on this opportunity the City and the VEC will need to act quickly to secure the services of TIR Consulting Group.

The TIR Consulting Group's global team is comprised of leading companies and consulting organizations in the fields of: energy efficiency, renewable energy technologies, construction, engineering, urban planning, architecture, real estate, information & communication technologies, power and utilities, and transport and logistics. The TIR Consulting Group's team will collaborate with the business community, government and the VEC in the preparation of a Third Industrial Revolution study, customized to the long-term economic development, energy security, and climate change goals of the area. The aim is to provide a comprehensive roadmap for the City of Vancouver and the entire Metro Vancouver region to successfully manage risk and leverage opportunities facing the region.

Strategic Analysis

Roadmap Development Plan and Approach

The TIR Consulting Group's proposal to develop a roadmap for Vancouver and the region is estimated to cost \$2,000,000, which includes consulting fees and two additional staff for the VEC to support this work.

If approved, the VEC will house Greater Vancouver INNOVATION CAPITAL and assist Jeremy Rifkin and his team who will facilitate the creation of this roadmap. The plan will involve a regional network of more than 200 engaged stakeholders representing the business community, the universities, and civil society working together as partners to advance a new economic and social vision that can take this region into a smart and ecologically sustainable digital era while easing affordability challenges and addressing inequality.

To this end, the VEC will bring together government representatives, the business community, universities, and civil society with the TIR Consulting Group in a ten-month initiative to jointly develop the Greater Vancouver INNOVATION CAPITAL roadmap. TIR Consulting Group is comprised of many of the world's leading engineering companies and institutes, sustainable urban development firms and green architectural companies, ICT and electronics companies, power and utility consultancies, transport and logistics specialists, economic modelers, and social and ecological systems theorists.

The Greater Vancouver INNOVATION CAPITAL roadmap will be prepared over a ten-month period beginning in 2018 or 2019, depending on funding and the consultant's availability. Upon completion of the roadmap, the business community and the Vancouver region, along with their stakeholders, will commence deployment in 2019 or 2020 with the announcement of the first projects. This will be a significant historical leadership event by the city of Vancouver to have initiated this legacy project.

TIR Consulting Group LLC

TIR Consulting Group LLC has prepared Third Industrial Revolution roadmaps for the following clients from 2009-2016:

- CPS Energy and the city of San Antonio, Texas (San Antonio is the seventh most populous city in the United States)
- The City of Rome, Italy
- The Principality of Monaco
- The Province of Utrecht, The Netherlands

Third industrial revolution master plans currently in deployment include:

- The region of Hauts-de-France
- The Grand Duchy of Luxembourg
- The Metropolitan Region of Rotterdam and The Hague

Staff completed a reference call with a representative from the city of Rotterdam to understand the value of TIR Consulting Groups work, their ability to facilitate a diverse group of stakeholders with different interests, and the relevance and quality of the final recommendations in their roadmap. The feedback from Rotterdam was overwhelmingly positive with respect to the consultants work and their ability to deliver a meaningful report on time and that was well supported by the key stakeholders. Specifically, the process has been an effective catalyst for aligning stakeholders around a plan to revitalize the local economy and become carbon free within 20 years. Rotterdam is still early in the implementation of the roadmap and, to date, has developed 15 business cases for high impact, scalable projects to implement the roadmap. They noted that several of these business cases received EU funding as a result of the process they undertook with Jeremy Rifkin and TIR Consulting.

Alignment with Existing Economic Development Initiatives

Resilient Future Economy

The VEC Economic Strategy is for a resilient future economy for Vancouver; an economy that is inclusive and diverse, regionally coordinated and communicated, tied to innovation across major public and private institutions, and generates enough wealth for the regional population to feel secure and sustain a high quality of life. Recognizing the future is the culmination of the decisions made today, there are a number of steps we must take to build this resilient future economy. We aim to:

- **Focus on our strengths:**

Over the past decade, the City has actively worked to create green jobs and grow the tech sector, successfully placing Vancouver into the global conversation as a rich start-up ecosystem and a leader in clentech and social entrepreneurship. By building on our strengths in social entrepreneurship, Vancouver is well positioned to take a leadership role in establishing strong social finance firms, developing innovative forms of impact investing, and leading in social purpose real estate projects to address affordability issues and develop 21st century infrastructure. This aligns with the objective of the VEC to support new funding models that help social entrepreneurs, and the VEC's objectives on affordability, given the issue's paramount importance to both talent and businesses.

- **Think and act both regionally and globally:**

The federal Supercluster Initiative and federal Smart Cities Challenge present powerful opportunities to collaborate regionally on world leading economic development and infrastructure initiatives. This directly aligns with the VEC's objectives to support high-potential entrepreneurs and emerging sectors, and increase our market reach through improved transportation and global connectivity. This also aligns with the VEC's objectives to advise on the region's green infrastructure; help local entrepreneurs developing green solutions to flourish; and help all organizations to improve their environmental practices.

- **Work with our institutions to build partnerships and programs that fuel innovation:**

Our regional institutions recognize the importance of strategic planning, R&D, and continually experimenting with better ways of operating, which means Vancouver is well positioned to develop demonstration projects, implement socially progressive procurement practices, and experiment with new approaches to policy development that can be mimicked nation-wide. This aligns well with the VEC's objectives to support the growth of IP generation and commercialization, improved inclusivity and diversity in local businesses and advocate for industry-responsive public services.

Regional Economic Support and Partnership Opportunities

In order for the proposed planning process to achieve regional support and produce an effective outcome, it will require engagement on the part of Metro Vancouver, businesses active in the

region, academic institutions, and NGOs. It must also balance the need to move the process forward without spending more effort and time than needed in the engagement process.

The Rotterdam and Hague Region of the Netherlands (MRDH) is currently implementing their program, following the development of a regional plan. Two Mayors in the region signed a letter of intent to contract with TIR Consulting Group LLC for a roadmap, initiating the process with the region. The MRDH plan, from its inception, was designed to bring together 23 local governments in a joint collaboration, which was done successfully.

The City of Vancouver is seen as a global leader on climate action, innovation and inclusivity. Embarking on this bold plan to transform the regional economy, one of the first to be done in North America, will further strengthen Vancouver's position as a global leader. The City of Vancouver will also take a leadership role within the region by initiating this study with TIR Consulting Group and working to secure support from regional partners throughout the process.

Staff recommend that funding for the Greater Vancouver INNOVATION CAPITAL regional roadmap come from regional, provincial and federal governments, along with the private sector. A cost-sharing model for the roadmap development, as well as ongoing regional economic programs and initiatives, will ensure the plan is supported by key stakeholders. To support this plan, staff are recommending the City provide initial seed funding of \$500,000 through the City Innovation Fund, conditional on \$1,500,000 coming in part or whole from regional, provincial, federal governments or the private sector.

Early engagement with the Provincial Ministry of Jobs, Trade and Technology, Clean Growth HUB, as well as the federal Western Economic Diversification Canada, at both the elected official and senior staff levels will also be important to identify cost-sharing models and available implementation funding opportunities.

If the VEC secures sufficient funding, City and VEC staff will connect with their counterparts in the region and Metro Vancouver to explore collaboration opportunities on this initiative.

Funding strategy

In order to fund the initial consulting fees and necessary support costs, the VEC will work with impact investors from the private sector and the Province with a goal of leveraging initial \$500,000 commitment from the City to achieve a total funding pool of \$2,000,000.

By making the initial financial commitment, the City will send a strong signal to potential funding partners that the City is committed to this plan and willing to take a leadership and initiator role.

Jeremy Rifkin has visited Vancouver several times in 2017 and 2018 to engage with leaders from the public and private sector and generate enthusiasm for the Third Industrial Revolution strategy. As a result of these efforts, impact investors, educational institutions, and private sector leaders ready to make financial commitments and offer their support to the development of this roadmap.

Preliminary conversations have begun with provincial government staff regarding the potential for funding from the BC Innovation Council and the Innovative Clean Energy (ICE) Fund.

It is anticipated that significant funding will be required to implement the strategy once it has been developed and this issue will be explored during the development of the strategy.

Public/Civic Agency Input (if applicable)

The VEC has solicited and received support from the private sector and academic institutions through the Council for Clean Capitalism. The Council for Clean Capitalism has issued a letter, signed by 25 leaders from industry, supporting the development of a Third Industrial Revolution infrastructure roadmap for Vancouver. The Council for Clean Capitalism is a group of forward-thinking companies working together to build a market economy that works better and accounts for all forms of wealth, building all costs and benefits into pricing a reality in Canada. See Appendix C for a copy of the letter.

Implications/Related Issues/Risk (if applicable)**Financial**

The proposed consulting fee to complete this roadmap is \$1,650,000 for the 10 month engagement. To engage TIR Consulting Group, the VEC is proposing an additional two resources to support this work at a cost of approximately \$225,000 for the development of the roadmap. Additional costs, estimated at approximately \$125,000, will be incurred for administrative and facilitation activities, such as, meetings, printing and office supplies. See Appendix A for a project budget.

The City's contribution to the initiative will come from the 2018 City Innovation Fund and be put towards the fees paid to TIR Consulting Group, and for additional VEC resources to support the project.

There are currently other regions keen to engage TIR Consulting Group who have the necessary funding in place and are willing to start their projects immediately. Jeremy Rifkin has indicated a preference to work with Vancouver at this time and is willing to delay any decision on where to deploy his team until the end of March, 2018 in order to give the VEC time to secure adequate funding. If the VEC is unable to gather sufficient partner funding commitments in time to secure Jeremy's team, the \$500,000 commitment from the City will be held until the end of 2019 to give the VEC time to secure partner funding and engage TIR Consulting when they have future availability. There is strong support from the private sector as there is currently an alignment of provincial, federal, and private funding available for the funding of infrastructure implementation related to this plan.

Following the development of the roadmap, the VEC will begin a process to engage regional partners in the development of business cases to implement the recommendations. This process will draw on resources from across the region, including governments, businesses, NGOs and academic institutions. In addition, businesses and academic institutions, who have already taken significant strides to more sustainable business practices, will have the opportunity to align their plans and business cases around a common roadmap as is being done successfully in countries and regions that have completed this plan.

CONCLUSION

The TIR Consulting Group have developed several successful regional plans, delivering exemplary results that go beyond economic impact to social and environmental benefits. The TIR Consulting Group's team are excellent facilitators with a proven track record and ability to facilitate multiple levels of government, private sector leaders, subject matter experts, educational institutions, and civil society stakeholders. Timeliness is key, the current available funding within both the private investor landscape and the federal government align in their mandate to fund infrastructure for a green economy.

By making the initial commitment to partially fund this initiative, the City will send a strong signal to the Province, regional partners and private sector impact investors that the City is committed to the development of a Third Industrial Revolution roadmap for the region.

* * * * *

Appendix A - Project Budget

TIR Consulting Group LLG	1,650,000
Salary for 2 VEC staff	223,448
Meeting expense	32,680
Printing and Office Supply	15,000
Stakeholder Messaging	20,000
Rotterdam Orientation Travel	10,000
Contingency	5,000
Admin Fee	43,750
Vancouver Economic Commission	349,878
Total	1,999,878

Appendix B - Alignment to Innovation Fund:

Innovation Fund Guidelines	Project Alignment
Aligns with City Priorities	Aligns with Economic Action Strategy and Renewable City Strategy.
Leverages minimum 1:1 3rd party investment	The funding strategy leverages 1:3 third party investments.
One-time opportunity (2 year maximum)	The City's proposed contribution is for the 10 month engagement with TIR Consulting Group to develop the roadmap.
Demonstrates clear outcome and transformation towards CoV goals	The deliverable is a roadmap with clear, measurable actions on how the City, and the region, can transform its economy, while creating a credible example to be use in other regions across Canada and the Cascadia region.

City of Vancouver Innovation Fund:

Increasingly, more opportunities exist to work with other parties to leverage expertise, funding, and access to various in kind resources in order to focus on strategic areas important to the city. This form of leverage allows the City to continue to advance its policy priorities at a lower cost to taxpayers.

The Innovation Fund is expected to build on the City's experience in leveraging funding and expertise with outside agencies, other levels of government, private sector, universities and not-for-profits to advance key City priorities through aggressive leveraging of external partners.

Some examples of these types of unique opportunities would include: Enhancing the success of our urban aboriginal residents; enhancing our local economy with an emphasis on social enterprise particularly in the green sector; innovative child care programs for children at risk; cultural programs which enhance the community and create local jobs for artists; enhancing the involvement of our seniors in community; enhancing our sport strategy through partnerships of significant sporting initiatives; sport for youth at risk; and others.

Guidelines for accessing City of Vancouver Innovation Fund:

With the establishment of an Innovation Fund, one time innovative projects can be funded to advance key agendas in the city. Accessing the City of Vancouver Innovation is at Council discretion; however, the following guidelines have been established to optimize the use of the fund:

- Aligns with Council Agenda (Housing, Public Safety, Economy, Environment)
- Demonstrates clear outcomes
- Matching requirements - target leverage of 3:1 (minimum 1:1) 3rd party investment (cash and in-kind) to City funding

- Size of CoV contribution should enable a broad range of programs to be supported by fund (Guideline - maximum project size of \$250,000 recommended).
- Projects which are one-time innovative opportunities; maximum commitment for expenditure of funds - up to 2 years
- Supports transformation and innovation in meeting City goals; shines a spotlight on Vancouver

Appendix C – Letter of Support from Council for Clean Capitalism



To: City of Vancouver Councillors

As business leaders representing a broad cross-section of the economy, we believe Vancouver has a remarkable opportunity to both lead and benefit from the shift to a low-carbon, high-productivity economy.

We recognize that this will not happen by default; it requires thoughtful planning to map and build out smart infrastructure that is fit for forward-looking purposes.

Thoughtful conversations are currently being held in Vancouver and British Columbia with respect to development of a detailed “Third Industrial Revolution” infrastructure roadmap. We are encouraged by this interest in Vancouver’s long-term transition into a smart, digitally interconnected, and highly productive built environment – one that will support a networked and ecologically benign economy.

We are further encouraged by the City of Vancouver’s efforts to initiate a roadmap process under the auspices of the Vancouver Economic Commission. We support this initiative and stand ready to provide technical expertise and economic insights. Our goal in so doing would be to help build a detailed and systemic document, framing the means by which the City of Vancouver and metropolitan area can position itself as a first-mover in the next economy.

Sincerely,

Ross Beaty, Chairman, Pan American Silver
Geoff Cape, CEO, Evergreen
Kim Caron, CEO & Director, Eco-Growth Environmental
Rola Dagher, President, Cisco Systems Canada
Michael Gentile, President & CEO, Philips Lighting Canada
Mike Gerbis, CEO, The Delphi Group
Toby Heaps, CEO, Corporate Knights
Gord Hicks, CEO, BGIS
Graham Kissack, Vice President, Corporate Social Responsibility, Catalyst Paper
Alex Lau, Vice President, Golden Properties Ltd.
Derek Lim Soo, CEO, Peak Power
Marcelo Lu, CEO, BASF Canada
Wayne Lye, General Ops Manager, ALEC SmartLighting / Triangle Research Intl Inc.
Thomas Mueller, President & CEO, Canada Green Building Council
Chuck Nervick, Senior Vice President, MediaEdge

Jay Nordenstrom, Executive Director, NAIMA Canada
Liam O'Brien, Associate Professor, Carleton University
Stanley Reitsma, CEO, GeoSource Energy
Karri Schuermans, Principal, Chambar Restaurant Corp.
Joel Solomon, Chair and CoFounder, Renewal Funds
Jyoti Stephens, VP, People, Mission and Culture, Nature's Path Foods
Sanjay Tugnait, CEO, Capgemini Canada
Annette Verschuren, Chair & CEO, NRStor
Wayne Wachell, CEO, CIO, Genus Capital Management
Rick Williams, President, CARMA Industries Inc.

Third Industrial Revolution Roadmap Appendix

- **The Context:** GDP is slowing, productivity is declining, inequality is increasing, and unemployment remains high across Canada and around the world. Now, after two centuries of industrial activity, North America and the world are confronted by real-time climate change and an unprecedented global environmental crisis.
- **The Opportunity:** While the Second Industrial Revolution is waning, a smart Third Industrial Revolution is emerging with the prospect of taking Canada into a sustainable low-carbon era. The federal government has announced an unprecedented C\$180 billion investment in infrastructure over the next eleven years. The proposed infrastructure investment should be earmarked, in part, to assist the cities and the ten provinces and three territories of Canada in transforming the built environment and in transitioning from the mature Second Industrial Revolution to the emerging Third Industrial Revolution economy and society.
- **The Initiative:** Canadian cities, provinces, and territories should each create customized infrastructure roadmaps for transforming their built environments – and economies and accompanying infrastructures – into smart and digitally integrated networks that will serve as flagships for the build out and scale up of the Third Industrial Revolution. The Third Industrial Revolution brings together the 5G Communication Internet, the Renewable Energy Internet, and the Mobility Internet (operating with driverless, electric, and fuel cell vehicles); atop an Internet of Things (IoT) platform embedded in the residential, commercial, and industrial building stock. It will transform the way cities, provinces, and territories manage, power, and move economic and social activity. In an emerging Smart Canada, every building will be retrofitted for energy efficiency and transformed into a digital node that serves as a distributed Big Data center, a micro power renewable energy generation site, and a charging station for electric vehicles.
- **The Objective:** The Smart Canada Third Industrial Revolution infrastructure roadmaps should be designed to embed already-existing and future built-environment initiatives in each city, province, and territory – which are currently often siloed into disconnected pilot projects – into a seamless Third Industrial Revolution digital infrastructure. Doing so has the potential to transform the economic and social life of every Canadian city, province, and territory in the first half of the 21st Century.
- **The Goal:** This multi-generation, Third Industrial Revolution smart infrastructure scale-up across Canada will involve companies engaged in erecting and managing the entire built environment. It will include virtually every industry, with the goals of increasing productivity, reducing fixed and marginal costs of conducting business, and dramatically lightening the ecological footprint. It will enable every city, province, and territory of Canada to spawn the new business models of the smart economy, to create employment for thousands of Canadian workers, and to dramatically exceed present climate change targets.
- **The Transformation:** The Third Industrial Revolution will give rise to a hybrid economic system – part capitalist networks and part sharing economy – and introduce the principles of generativity, circularity, and resilience into urban, suburban, and agriculture landscapes. The hybrid economy will allow businesses and consumers across the Internet of Things built environment to increasingly split their attention between markets and networks, ownership and access, consumerism and sustainability, and GDP and quality of life, in a smart and digitally mediated Canadian society.