Realizing the Resilient City

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Special Thanks To:
Realizing the Resilient City
Urban Resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, grow and thrive, no matter what kinds of chronic stresses and acute shocks they experience.
Urban Resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to **survive, adapt, grow and thrive**, no matter what kinds of **chronic stresses** and **acute shocks** they experience.
Additional attention given to:

Measures to reduce, mitigate, and manage exogenous economic shocks:

- e.g., natural hazards, market cycles and volatility, supply chains, currency risk exposure, robotics, political risk, etc.
- In particular shocks associated with priority industries or business communities.

Measures to develop and/or reinforce aspects of metro productivity:

- Reduce endogenous chronic stresses, e.g., improved transportation access and efficiency, health outcomes, social marginalization, etc
- Improve inter-institutional collaboration, policy stability.
What is infrastructure impacted by?

Natural Environment
• Flooding
• Wind
• Landslide
• Debris
• Earthquake

Other Physical Infrastructure
• Power supply
• Water supply
• Transport network
• Telecommunications
• Materials supply chains

Social and Economic Considerations
• User experience and willingness to pay
• Community buy-in
• Operations and maintenance staff capacity and availability
• Funding for O+M

RESILIENT INFRASTRUCTURE DESIGN

What does resilient infrastructure impact?

Direct Benefits may include:
• Enabling provision of public goods and meeting basic needs
• Enabling provision of social services (education, health, security)
• Enabling connectivity – physical and communications
• Economic development

Indirect ‘Co-benefits’ may include:
• Improvements in health and well-being
• Improvements in safety and security
• Environmental benefits
• Community cohesion
• Education and capacity building
• Economic development
What is infrastructure impacted by?

**Natural Environment**
- Flooding
- Wind
- Landslide
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**Other Physical Infrastructure**
- Power supply
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**Social and Economic Considerations**
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- Community buy-in
- Operations and maintenance staff capacity and availability
- Funding for O+M

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**RESILIENT INFRASTRUCTURE DESIGN**

→ Natural hazard assessment
→ New design standards
→ New building regulations and enforcement

→ Cascading impacts analysis
→ Redundancy and designing for failure
→ Performance-based design

→ Stakeholder/user engagement in design and decision-making process
→ Consideration of full-project lifecycle in design (long term O+M needs)
→ Innovative resilience finance models

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**What does resilient infrastructure impact?**

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**Indirect ‘Co-benefits’ may include:**
- Improvements in health and well-being
- Improvements in safety and security
- Environmental benefits
- Community cohesion
- Education and capacity building
- Economic development
### What are schools impacted by?

#### Natural environment
- Flooding, Wind, Extreme Temperatures, Earthquakes

#### Other physical infrastructure systems
- Power supply
- Water supply
- Telecommunications
- Public transportation network
- Health system

#### Operational considerations
- Capacity and reliability of staff
- Funding for O+M
- Consistency of maintenance with original design intent

#### Social and economic considerations
- Changing demographics and needs of users over time
- Involvement of families and communities
- Emergency preparedness training
- School location / safe routes to schools

### RESILIENT SCHOOL DESIGN

### What do resilient schools have the potential to impact?

#### Direct Benefits:
- Provide education to all school-age children
- Support livelihoods and facilitate economic development through an educated workforce
- Keep occupants safe
- Provide care of children to allow parents to earn a living

#### Indirect ‘Co-Benefits’: 
- Ensure social stability, security and justice through equitable delivery of education
- Monitoring and support of childhood health (e.g., health services, recreational infrastructure and active design principles) to reduce health expenditures
- Act as emergency shelter during crisis
- Provide community resources during off-hours (parks, playgrounds, community spaces)
- Produce renewable energy
- Cultivate local produce
Paris intends to transform 700 schoolyards into local ‘oases’ by replacing asphalt with vegetation for cooling and well-being in the city. Schoolyards will become places for community learning, health and well-being, as well as “cool refuges” for community members vulnerable to heat waves.
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Special Thanks To:

PIONEERED BY THE ROCKEFELLER FOUNDATION

100 RESILIENT CITIES

@FutureCitiesCA #FCCSummit2018
Realizing the Resilient City: Being Future Ready Calgary

Future Cities Canada, 2018 November
Cross Cutting Theme
How do we encourage a trusting environment that supports intentional risk taking, innovation and co-creation?

Economic Resilience
How does Calgary strengthen our economic drivers to be better prepared for stressors & shocks?

Inclusive Leadership and Decision Making
How does Calgary capitalize on its diverse human assets?

Environment Resilience
How can Calgary strengthen our natural assets and ecosystems within our city and region?

Infrastructure Resilience
How does Calgary grow an integrated, connected and well managed city?
Economic Recovery: City Actions

- Keep Calgarians working
- Invest in infrastructure
- Reduce the cost and increase the effectiveness of local government
## Pivoting our greatest asset

<table>
<thead>
<tr>
<th>Talent</th>
<th>Innovation</th>
<th>Place</th>
<th>Business Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada’s destination for talent</td>
<td>Canada’s leading B2B innovation ecosystem</td>
<td>Canada’s most livable city</td>
<td>Canada’s most business-friendly city</td>
</tr>
</tbody>
</table>

### Key initiatives

<table>
<thead>
<tr>
<th>Talent</th>
<th>Innovation</th>
<th>Place</th>
<th>Business Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Canada’s largest talent accelerator</td>
<td>Create the Calgary Innovation Corridor</td>
<td>Accelerate urbanization and connectivity in the core</td>
<td>Deploy initiatives to facilitate business development and growth</td>
</tr>
<tr>
<td>Establish Calgary as a magnet for students</td>
<td>Build funding to support generational growth</td>
<td>Expand and enhance tourism, culture, and recreation assets</td>
<td></td>
</tr>
<tr>
<td>Emphasize creativity and innovation in K-U</td>
<td>Develop relationships within the innovation ecosystem</td>
<td>Intentionally support diversity and inclusion</td>
<td></td>
</tr>
<tr>
<td>Address immediate needs through attraction efforts</td>
<td>Accelerate growth through attraction, advocacy and trade</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Strategic goal

- **Talent**: Create Canada’s largest talent accelerator
- **Innovation**: Create the Calgary Innovation Corridor
- **Place**: Accelerate urbanization and connectivity in the core
- **Business Environment**: Deploy initiatives to facilitate business development and growth

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**Calgary**
Talent Accelerator Hub:
Create Canada’s Largest Talent Accelerator

Stakeholders

- Calgary Municipal Land Corporation (CMLC)
  - Planning and design
  - Facility construction

- Participants
  - Interest / demand
  - Strong uptake

- Corporations
  - Demand forecasts
  - Hiring commitment

- Post-Secondary Institutions
  - Programs
  - Instructors

- The City of Calgary
  - Funding
  - Location

- Province of Alberta
  - Initial funding
  - Tuition subsidies
Investing in Resilience: 2019-2022

Ensures continuity of critical services

Economy & Society

Promotes Cohesive & Engaged Communities

Ensures Social Stability & Security and Justice

Fosters economic prosperity

Provides Reliable Communications & Mobility

Leadership & Strategy

Empowers broad range of stakeholders

Fosters long-term & integrated planning

Provides and enhances natural & manmade assets

Ensures basic needs

Supports livelihoods & employment

**Recommended capital investments to be approved by City Council in 2018 November**
Temporary testing area for Autonomous Systems

To inquire about testing your technology here, please call Andrew Sedor at 403-803-9760.

To inquire about industrial land ownership opportunities, please call Alex Wihak at 403-807-3563.

To inquire about business development opportunities, please call Patti Dunlop from Calgary Economic Development at 403-767-1322.

Christine Arthurs, Deputy Chief Resilience Officer

Calgary, Alberta, Canada

Chris.Arthurs@calgary.ca

#ResilientYYC
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Special Thanks To:
500,000 Torontonians in 35+ year old buildings
Resilient towers is a project to define policy changes which will create an enabling environment for significantly scaling up retrofits of towers.

- Improve the resilience and quality of the city’s affordable market rental housing stock;
- Decrease GHG emissions by >50%;
- Improve the livability and social outcomes; and
- Create local jobs and support innovation through the retrofit economy.
Resilient Towers
Potential Scale in Toronto

Total Towers
~1200 (City Only)

Target Group
~880 Towers

Per Year Retrofits
30–50
For 20 years
Kick off at TRBOT (Feb)

Owner interviews (Mar-July)

Multidivisional WG (Aug - )

Deloitte Roundtable (Oct)

GTAA Roundtable (Nov)
## Ownership Features

<table>
<thead>
<tr>
<th></th>
<th>Tax-deferred (Pension Funds)</th>
<th>Publicly-traded (REITs)</th>
<th>Capital Pools (Insurance, PE)</th>
<th>Large Independent</th>
<th>Small Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to Capital</strong></td>
<td>√</td>
<td>×</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Cost of Capital</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Income Tax Exposure</strong></td>
<td>X</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Access to Services &amp; Information</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td><strong>Risk Appetite</strong></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
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</table>
CANADIAN HOUSEHOLDS LIVING IN HIGHRISE BUILDINGS (FIVE STOREYS AND HIGHER)
By Period of Construction, 2016
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Special Thanks To:
OnePGH is Pittsburgh’s first comprehensive resilience strategy designed to create measurable results for Pittsburhgers.

By 2030, the City aims to show measurable success in tackling environmental stresses, retaining cultural assets, maintaining public spaces, eradicating hunger and homelessness, increasing physical and social mobility, and increasing access to opportunity in every neighborhood.
PROCESS AND TIMELINE

P4 (2015)

Preliminary Resilience Strategy

ONEPGH Resilience Strategy

Pittsburgh Equity Indicators (2018)

ONEPGH Investment Prospectus (2018)
The Sustainability and Resilience Division conducted extensive community outreach, engaging more than 1,000 Pittsburghers in roundtables, deliberative forums, working groups, resilience fairs and steering committees to develop ONEPGH.

Pittsburgh’s Shocks and Stresses Profile
Organized by the values of P4, the ONEPGH Resilience Strategy pushes forward existing actions and supplements with new initiatives.

**Values**

**People**
Pittsburgh will empower all residents to contribute to thriving and supportive communities by ensuring that basic needs are met. We will be an inclusive city of innovation that celebrates our diversity, and all residents will have equal access to resources and opportunity.

**Place**
Pittsburgh will use land to benefit all residents, increase social cohesion, connectivity, public and ecological health, and to protect against current and future risks. We will design, scale, and maintain our infrastructure for current and future needs, providing benefits and services to our neighborhoods during times of calm and crisis.

**Planet**
Pittsburgh will achieve long-term environmental and health through wise stewardship, improved use of our resources, and a reduced carbon footprint.

**Performance**
Pittsburgh will work closely with partners and neighbors for improved planning and decision-making.
<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology and communications</strong></td>
<td>Access and prevention</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Health status and outcomes</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Childhood health and wellbeing</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Policing and criminal justice</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Public safety</td>
<td>44</td>
</tr>
<tr>
<td><strong>City-led engagement</strong></td>
<td>Educational opportunities</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Student success and discipline</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>56</td>
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<tr>
<td></td>
<td>Entrepreneurship and workforce development</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Income and poverty</td>
<td>42</td>
</tr>
<tr>
<td><strong>Grassroots engagement</strong></td>
<td>Housing affordability and stability</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Infrastructure quality and investment</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Neighborhood composition and opportunity</td>
<td>41</td>
</tr>
<tr>
<td><strong>Infrastructure quality and environment</strong></td>
<td>Transportation</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Environment and sustainability</td>
<td>83</td>
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<tr>
<td><strong>Political participation</strong></td>
<td>Representation</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Public participation</td>
<td>71</td>
</tr>
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<td></td>
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<td><strong>Housing, Transportation, Infrastructure, and Environment</strong></td>
<td>Technology and communications</td>
<td>58</td>
</tr>
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</table>
A Portfolio of Investments to Support People, Planet, Place, and Performance

$4B invested in 45 projects to...

- Ensure Pre-K For All
- Increase Economic Mobility
- Expand Access to Affordable Housing
- Invest in our Critical Water Infrastructure
- Create New Public Art, while Preserving our 168 Works of Art
- Ensuring all Residents are within a 5-minute Walk of a High-Quality Green Space
- Removing 2B Gallons of Stormwater from our Sewers by Investing in 27 Green Infrastructure Projects
- Eliminate Waste, Reduce Greenhouse Gases by 50%, and Achieve 100% Renewable Energy Electricity

$396,388,000

$2,161,914,702

$1,640,021,448
Since the launch of OnePGH in 2017, the City has brought together more than 125 partners to help identify critical needs and develop plans for implementation. Key to achieving the ambitious goals of OnePGH is continued involvement from every sector, including public, private, nonprofit, civic, and philanthropic.

While OnePGH will tap over $2B in existing and new public resources, the goal is to raise another estimated $2B from private sources by 2030. These resources will be used to innovate, pilot programs, and create better public services and amenities in the City of Pittsburgh.
THE ONEPGH FUND

To coordinate support for OnePGH, a nonprofit organization—the OnePGH Fund—is being launched to:

- Mobilize effective cross-sector partnerships
- Cultivate and solicit private contributions for priority, public initiatives
- Provide an accountable vehicle to manage and report on philanthropic investments

Despite City leadership changes over time, the organization is designed to be a lasting agent for civic impact in Pittsburgh.
PERFORMANCE: Measuring Success

Pittsburgh Survey 2.0

Equity Indicators Report

UN Sustainable Development Goals
For more information, contact:

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onepgh.pittsburghpa.gov
Activating City Levers to Build Resilience
KEEP CALM AND WE NEED MONEY
City Levers
City Levers | What’s in your sphere of influence?

Government Money
- City Expense Budget
- City Capital Budget
- Procurement – Built Environment
- Procurement – Contracts
- Franchising

Government Assets
- Government Owned Property
- Government Employees
- Government Processes
- Government Operations
- Government Convening Power

Other People’s Money: Government / Private Sector Intersection
- Zoning / Land Use
- Rules and Regulations
- Enforcement
- Tax Policy / Incentives
- Licensing
- Permits
- NGO Funded work
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Share your thoughts

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