

Dear Nova Scotia Municipality Colleagues,

Thank you for participating in our presentation at the NSFAM meeting.

In the closing slide you'll see 5 ways how your municipality can use the Circular Economy to save costs and improve quality of life for voters and employees. To learn more, you can reach us at the email addresses shown in the closing slide.

with kind regards,

Katja Hansen, Douglas Mulhall, Robert Cervelli



[www. positiveimpakt.eu](http://www.positiveimpakt.eu)



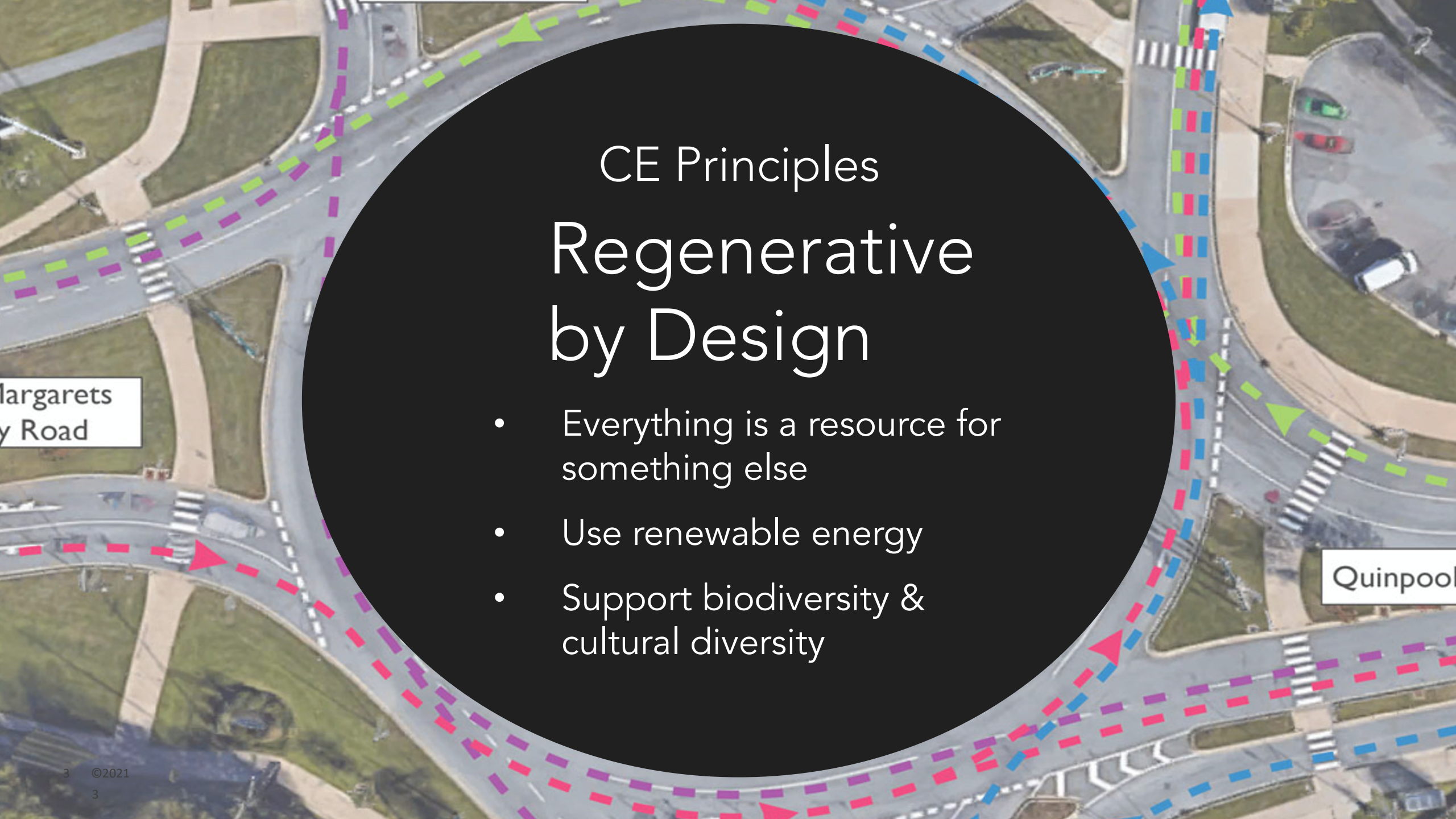
[www. centreforlocalprosperity.ca](http://www.centreforlocalprosperity.ca)



The Role of Municipalities in The Circular Economy

Nova Scotia Federation of Municipalities
Reshaping the Future Together
04.11.2021

Robert Cervelli
Katja Hansen
Douglas Mulhall



CE Principles Regenerative by Design

- Everything is a resource for something else
- Use renewable energy
- Support biodiversity & cultural diversity



Nova Scotia Municipalities Context For The Circular Economy

Robert Cervelli

Margarets
y Road

Quinpool

Top Issues for Nova Scotia Municipalities

- Infrastructure
- EPR
- Local goods

Re-localized Economy

- Local production of needs
- Economic resilience
- Buffering against global supply shocks

Climate Readiness

- Reduced carbon footprint
- Moving towards net zero energy
- Deep adaptation

Wider Issues Facing Municipalities

Assessing the Potential for Local Procurement as an Economic Engine

*An Analysis of Public Anchor
Institutional Spending in
Atlantic Canada*



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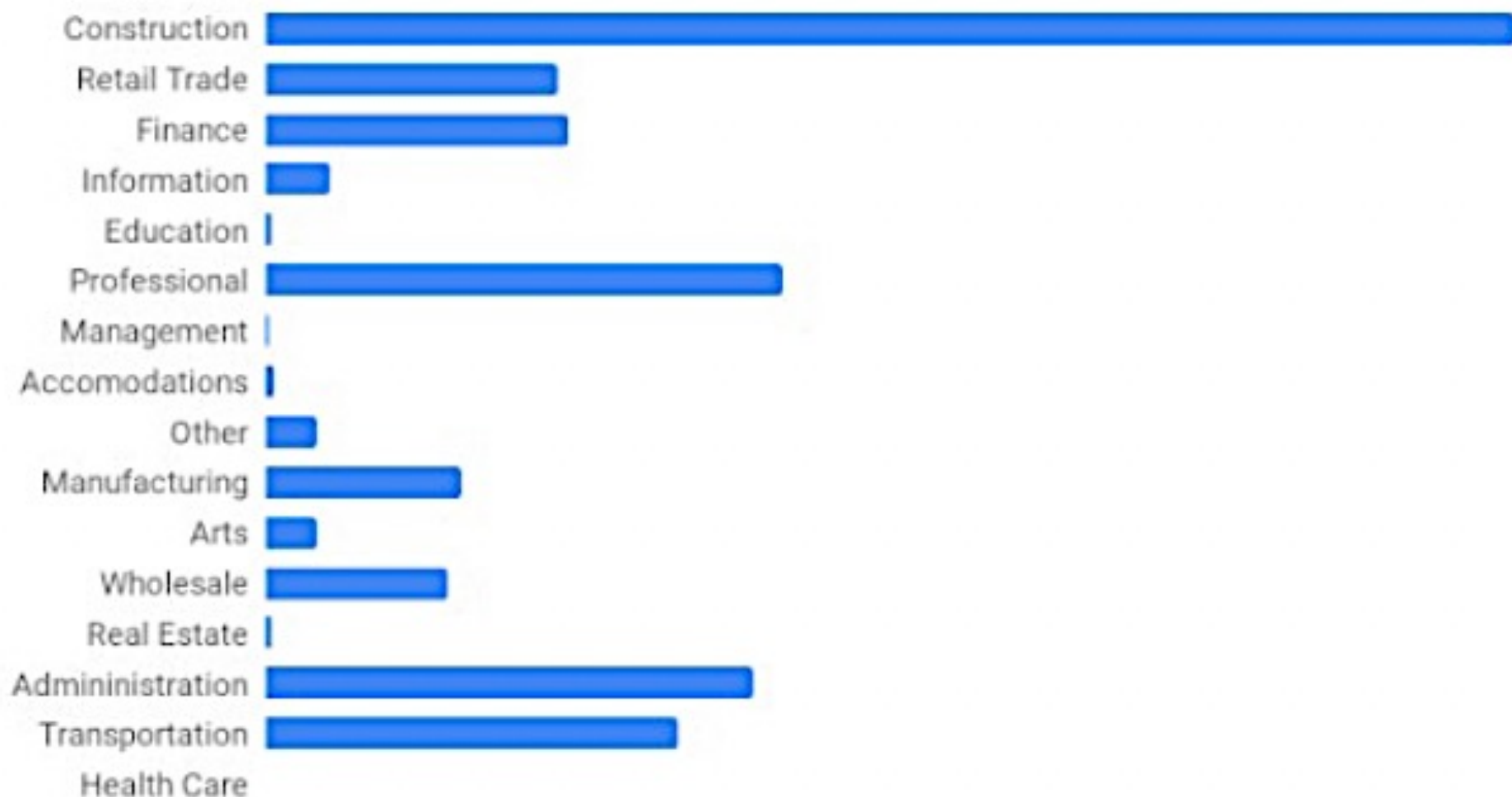
- Municipal spending analysis
- Multiplier effects
- Benefits of 10% shift in spending
- Low hanging fruit
- Working within trade agreements

<http://centreforlocalprosperity.ca/wp-content/uploads/2021/01/Assessing-Local-Procurement-Double-Page.pdf>

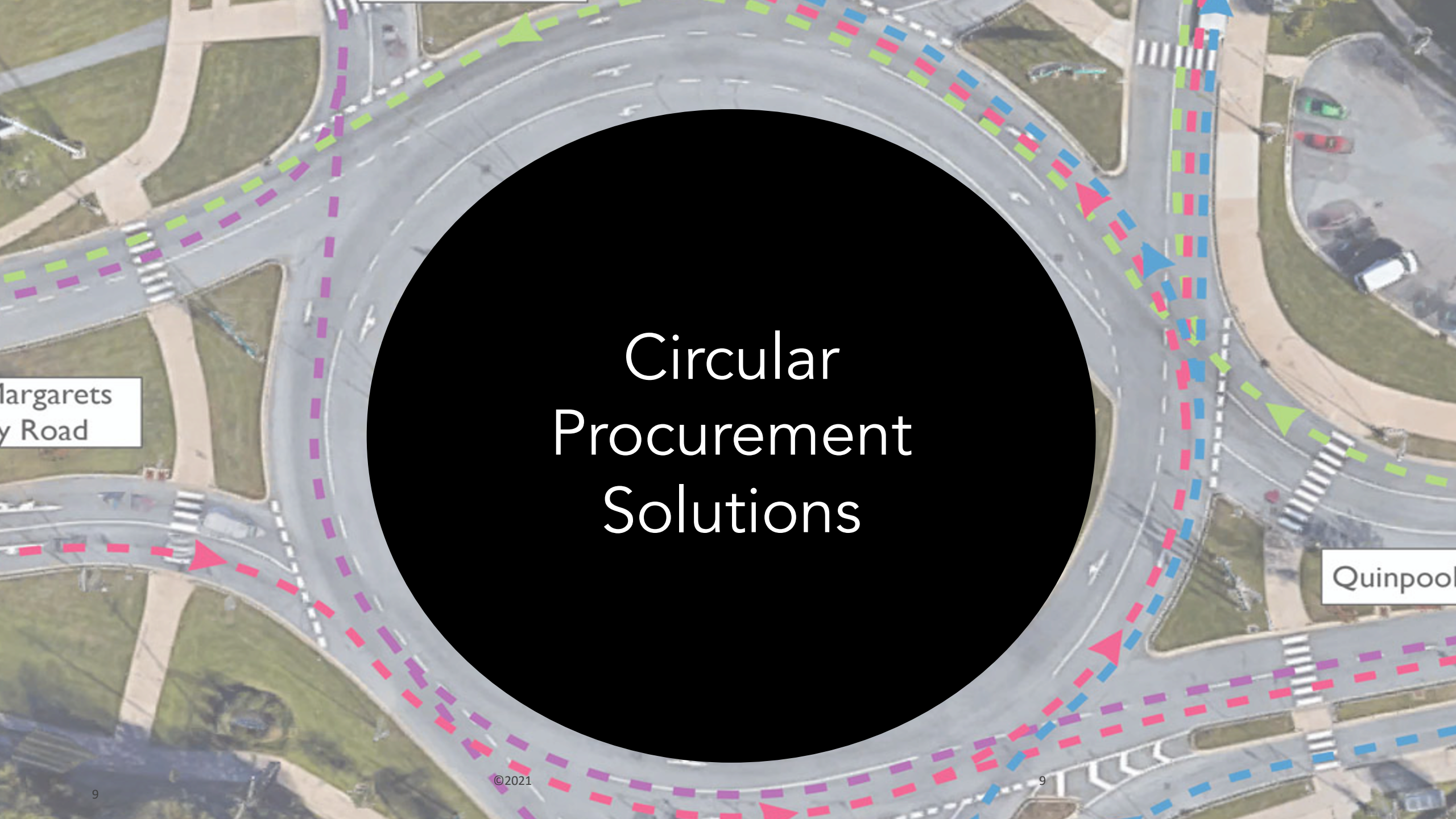


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Average Spend by Industrial Classification for Municipalities



-----> dollars spent ----->



Circular Procurement Solutions

Margarets
Road

Quinpool

Local Procurement as an Economic Engine

2 municipalities (pop'n approx. 20,000)

- Average spend: \$18 million (top 250 suppliers)
- Average leakage rate: 25% (outside of province)
- Local procurement multiplier effect: 1.25 to 1.70x
- 10% shift in spending to local suppliers: \$1.8 million new local stimulus
- Need to rebuild local supplier capacity

How to Start with Circular Procurement

Douglas Mulhall

- First, Know What You Have (without paying for it)
- Build Modular & Healthy to Save Costs

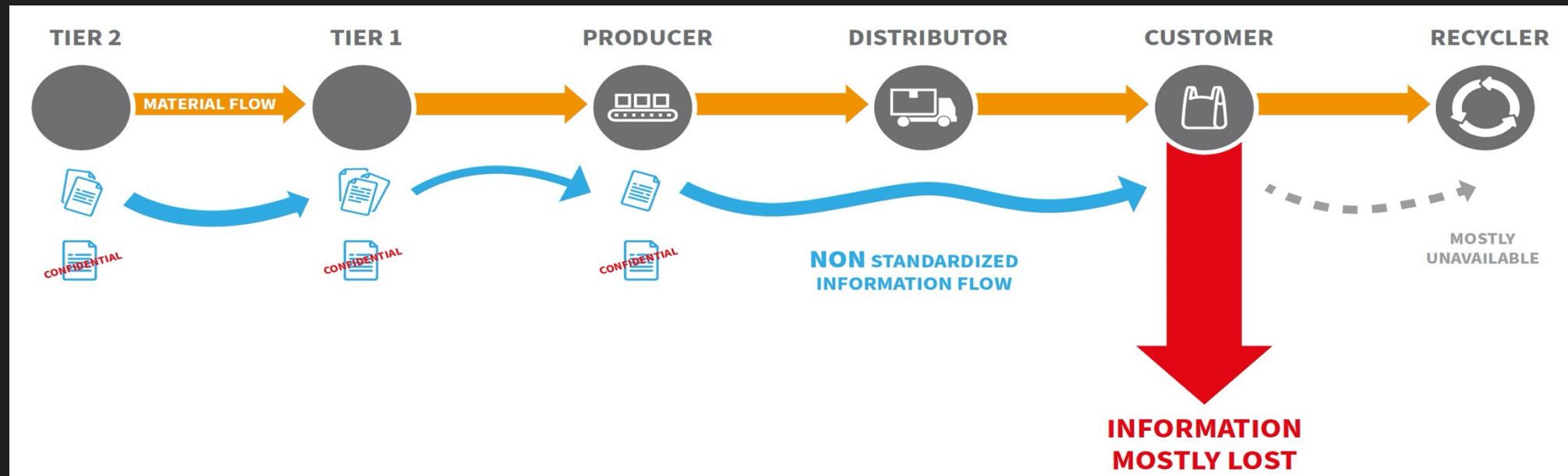
TOWN HALL

1234

- First, Know What You Have

The linear economy loses data along the road

- Product content data is expensive to gather
- Information is non-standardized
- Existing green standards lack data on circular qualities
- Extended Producer Responsibility is hard to determine



Digital Fingerprint for Circular Qualities of Products



PCDS
PRODUCT CIRCULARITY
DATA SHEET

Created by

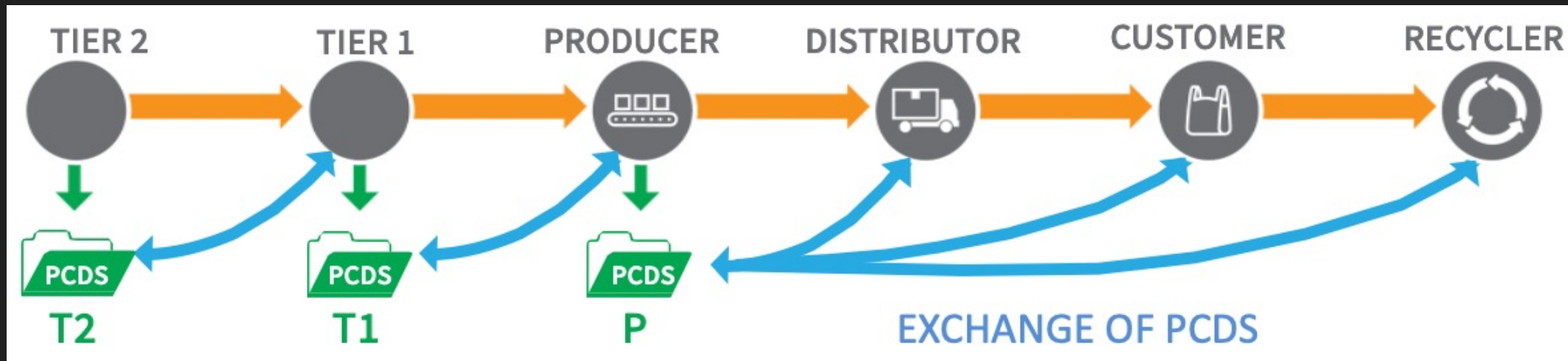







THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG
Ministry of the Economy



Product Circularity Data Sheet (PCDS)

- Completed by manufacturers and suppliers
- Critical circularity data travels throughout the stakeholder network
- Clear YES/NO statements
- User-friendly template tested with government & private sector
- Traceable for Extended Producer Responsibility



| SECTION | | | STATEMENTS (Example) |
|---------|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 |  | GENERAL INFORMATION | <ul style="list-style-type: none"> • Identification number • Manufacturer |
| 2 |  | COMPOSITION | <ul style="list-style-type: none"> • Contains >75-95 % post-consumer recycled content . • Does not contain Substances of Very High Concern |
| 3 |  | DESIGNED FOR BETTER USE | <ul style="list-style-type: none"> • Can be maintained & repaired by untrained personnel at location of product use. |
| 4 |  | DESIGNED FOR DISSASSEMBLY | <ul style="list-style-type: none"> • Can be demounted using reversible connectors. • Can be dismantled to component materials level |
| 5 |  | DESIGNED FOR REUSE | <ul style="list-style-type: none"> • Designed for re-use with minimal modification. • Designed for composting in a home composter. |

PCDS Benefits

Standardized terms
& format



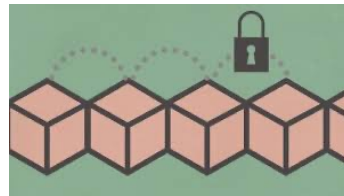
Based on global
standards



Open source &
Auditable



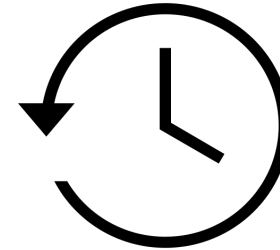
Secure trustable
issuer



Automated &
Interoperable



Saves time
& costs



CE design
guidance for
suppliers

More information www.pcds.lu

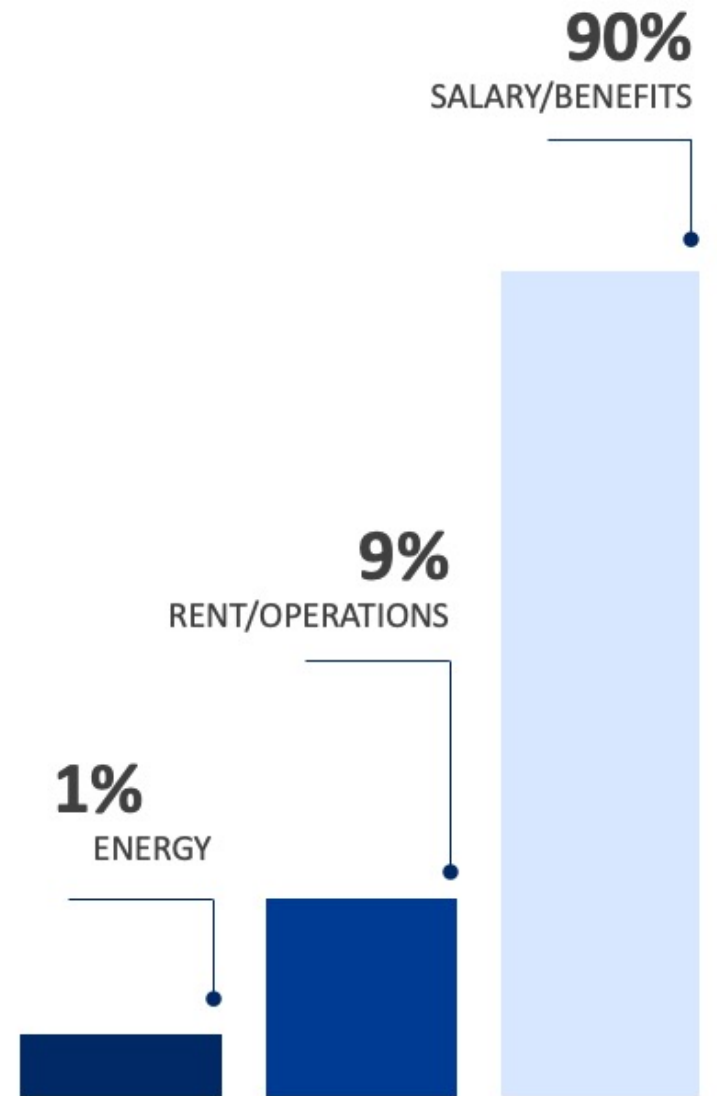
- 
- A photograph of a modern town hall building with a dark, textured facade and a prominent white portico. The words "TOWN HALL" are visible on the upper left part of the building, and "TOWN CLERK" is partially visible on the right. A large black oval is superimposed over the center of the image, containing white text.
- Build Modular & Healthy to Save Costs

Katja Hansen



People are 90% of the operating costs of building

- Not the energy it uses
- Not the water it uses



Source: Kate Lister, "What's good for people? Moving from wellness to well-being". Knoll Workplace Research, 2014.

Performance improvements are measurable

Harvard study.

Cognitive scores 61% higher compared to lower quality environments.

101% higher in exceptional certified environment.

United Technologies THE IMPACT OF GREEN BUILDINGS ON **COGNITIVE FUNCTION**

24 PARTICIPANTS

6 DAYS **OVER** **2** WEEKS

2 TESTS

1 Multivariable test for building types:

| | | |
|--------------------------------------|------------------|------------------------------------------------|
| Conventional i.e., Typical Office | Green Low VOC | Enhanced Green Low VOC and High Ventilation |
|--------------------------------------|------------------|------------------------------------------------|

2 Single-variable test for carbon dioxide:

| | | |
|---------------------|--------------------------|----------------------|
| Low CO ₂ | Moderate CO ₂ | High CO ₂ |
|---------------------|--------------------------|----------------------|

The Total Indoor Environmental Quality Lab is housed at Syracuse Center of Excellence. The lab was used to simulate conditions observed in different office environments.

PARTICIPANTS EXPERIENCED

- SIGNIFICANTLY BETTER COGNITIVE FUNCTION
- FEWER HEALTH SYMPTOMS
- BETTER PERCEIVED INDOOR ENVIRONMENTAL QUALITY

BASED ON THE FOLLOWING COGNITIVE FUNCTION DOMAINS

- Basic activity level
- Applied activity level
- Focused activity level
- Task orientation
- Crisis response
- Information seeking
- Information usage
- Breadth of approach
- Strategy

Allen JC, MacNaughton P, Satoh U, Santavirta S, Vallero J, Springer JD. 2015. Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments. Environ Health Perspect DOI: 10.1289/ehp.1510027 © 2015 United Technologies

Source: Harvard University <https://green.harvard.edu/tools-resources/research-highlight/impact-green-buildings-cognitive-function>

For existing buildings available today

Probiotic cleaners clean the air & surfaces safely



Do Healthy Buildings Cost More?

Not according to municipalities of
Venlo Netherlands and Ronneby Sweden.

KINDERGARTEN RONNEBY, SWEDEN

Features added below cost of original design;

Acoustics Quality

Air Quality

Materials Quality

Improved teacher satisfaction

Co-Designed by 5 year-olds





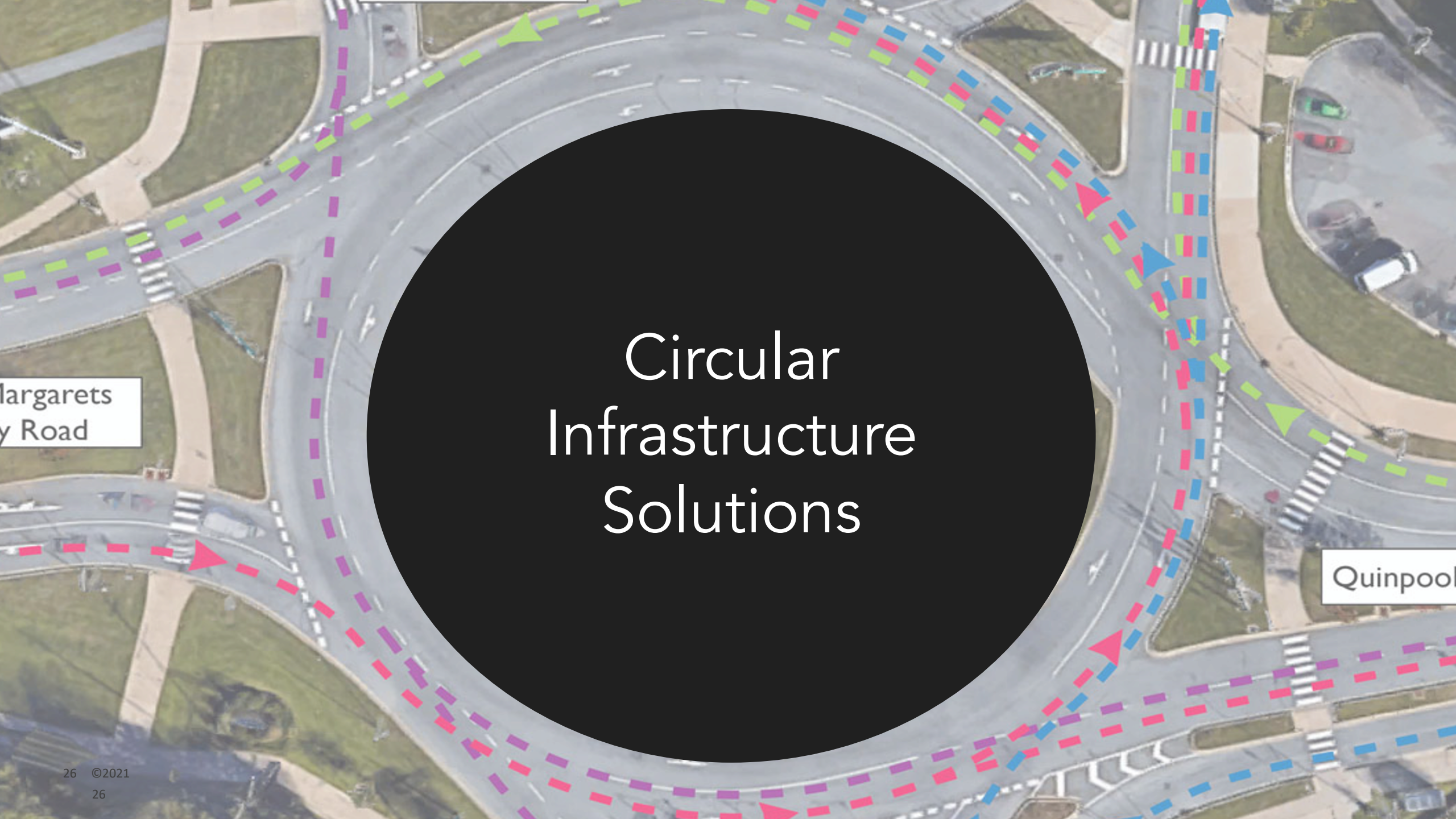
Venlo City Hall

- Indoor air quality better than outside
- Sick leave reduced with projected saving of ~\$3.5 million over life of project
- Guaranteed take-back for furnishings resulting in forecastable economic benefits
- ~\$25 million in operating costs saved due to energy & other systems designs
- Capital cost decrease of ~\$5 million

Circular Healthy Buildings

- Modular, reversible & flexible design
- Healthy products & materials
- Climate Resilient
- Water & energy self-sufficient
- Measurably healthy air quality
- Measurable acoustics quality
- Accessible green space & natural light
- High user satisfaction with comfort
- Safe & secure without being oppressive
- Measurable productivity improvement
- Measurable value improvement
- Saves operating costs
- Smart IT integration generates savings





Circular Infrastructure Solutions

Margarets
Road

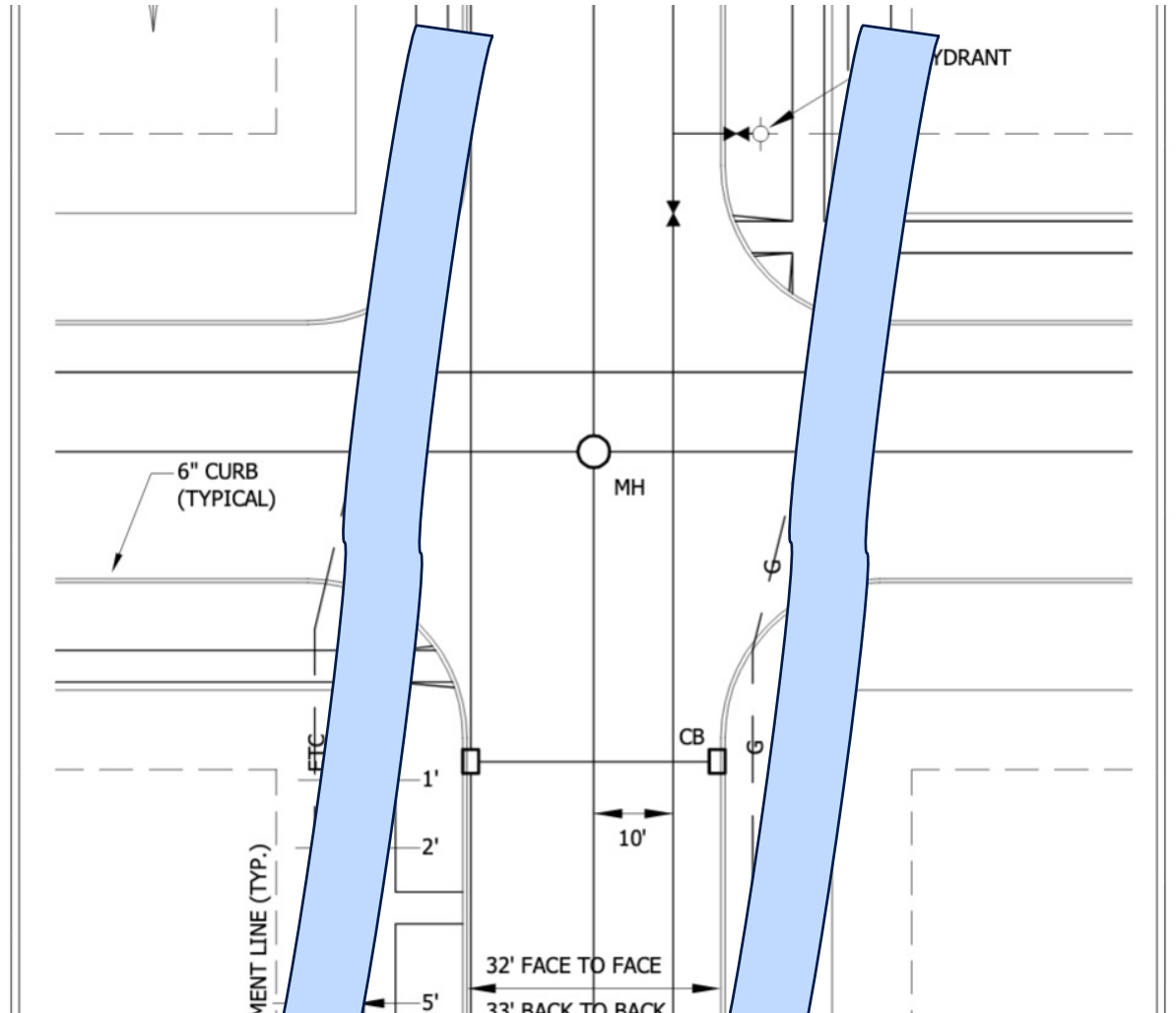
Quinpool



Water,
Wastewater,
Energy,
Communications,

Utilidors

- In use & proven
- Protect critical infrastructure
- Large savings on construction & maintenance



Pre-fabricated & Modular
Relocatable
Traffic-friendly
Rapid access to services



TYPICAL SMALL UTILITY CORRIDORS
WALK

LAST REVISION
MARCH 2016

Autonomous Buildings



Bullitt
Foundation
Building,
Seattle

What municipalities can do today to save costs

- Use local procurement as a tool for suppliers to be circular
- Pilot the PCDS with suppliers to save costs with circularity & EPR
- Use healthy & autonomous building examples to improve productivity
- Pilot probiotic cleaners to improve indoor air & occupant performance
- Investigate the utilidor concept for infrastructure savings

For more information....



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