THE CITY COUNCIL OF WATERLOO, IOWA
WORK SESSION TO BE HELD AT
Harold E. Getty Council Chambers
Monday, April 17, 2023
3:40 PM

RULES FOR WORK SESSION PUBLIC COMMENT

Iowa Code Chapter 21 gives the public the right to attend council meetings, but it does not require cities to allow public participation except during public hearings.The city council shall not receive any public comment during a work session.

Roll Call.

Agenda, as proposed or amended.

Approval of Minutes of April 3, 2023, as proposed.

3:40 p.m. Discussion of solar group purchasing.

Submitted by: Jonathan Grieder, Ward 2 Council member

Approx. 4:00 p.m. Discussion of FY2022 audited financial statements.

Submitted by: Bridgett Wood, Finance Manager

Approx. 4:20 p.m. Discussion of Honeywell Smart City Initiative.

Submitted by: Mayor Hart

ADJOURNMENT

Kelley Felchle
City Clerk

April 3, 2023

COUNCIL WORK SESSION
Harold E. Getty Council Chambers
4:05 p.m.

Roll Call.

Members present: Mayor Hart in the Chair, Boesen, Nichols, Creighton-Smith, Chiles, Grieder. Mr. Feuss arrived at 4:31 p.m. Absent: Wilder.

Agenda, as proposed or amended.

Nichols/Grieder
that the agenda, as proposed or amended, be approved. Voice vote-Ayes: Five. Motion carried.

Approval of Minutes of March 20, 2023, as proposed.

Nichols/Grieder
that the minutes of the March 20, 2023 Council Work Session, be approved. Voice vote-Ayes: Five. Motion carried.

4:05 p.m. - Discussion of Procurement Policy.

Bridgett Wood, Finance Manager, provided an overview of the proposed changes to the purchasing policy, which would put the policy more in line with Iowa State Code.

Council reviewed and discussed the proposed changes with Ms. Wood.

Approx. 4:20 p.m. - Discussion of 4th, 5th, 6th, Street Conversion to Two-Way.

Mark Durbahn, AECOM Project Manager, provided an overview and update on the 4th, 5th and 6th Street Conversion Study.

Mr. Durbahn responded to the council's questions and concerns.

Doug Schindel, AECOM, commented that citizens may contact AECOM or City staff in the Planning and Engineering departments with questions and concerns.

Approx. 4:50 p.m. - Discussion of Brownfields Grant.

Noel Anderson, Community Planning and Development Director, commented that representatives from HR Green and EPA are here tonight to speak about the Brownfields grant.

Mayor Hart explained that city staff member, Tim Andera, has been attending Brownfield Bootcamps on the federal level to determine how we can work together with our federal agencies on some larger Brownfield grants as well.

Rose Ahmundson and Steve Prideaux, HR Green, provided an overview and status update of the Brownfield Program.

Jennifer Morris, EPA-Project Officer, reviewed the EPA Direct Technical Assistance Redevelopment of Brownfields.

Mayor Hart requested another work session be scheduled soon to continue the discussion.

ADJOURNMENT

Feuss/Grieder
that the meeting adjourn at 5:15 p..m., be approved. Voice vote-Ayes: Six. Motion .

CITY OF WATERLOO, IOWA

Financial Presentation

June 30, 2022

Data portrayed in the attached graphic presentations were derived from the City's comprehensive annual financial report which was audited by RSM US LLP, whose report thereon is dated March 31, 2023. The data presented should be read in conjunction with the City's annual comprehensive financial report.

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Agenda

- Summary of the Audit Process
- Summarize June 30, 2022 Financial Performance
- Internal Control and Compliance Reporting
- Auditor Communications

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Summary of the Audit Process

- External audit required by state statutes and federal guidelines
- Provide reasonable assurance that the financial statements are fairly stated, in all material respects, with GAAP
- Consideration of internal controls over financial reporting and compliance
- Tests of compliance with federal grant requirements
- Tests of compliance with certain state requirements

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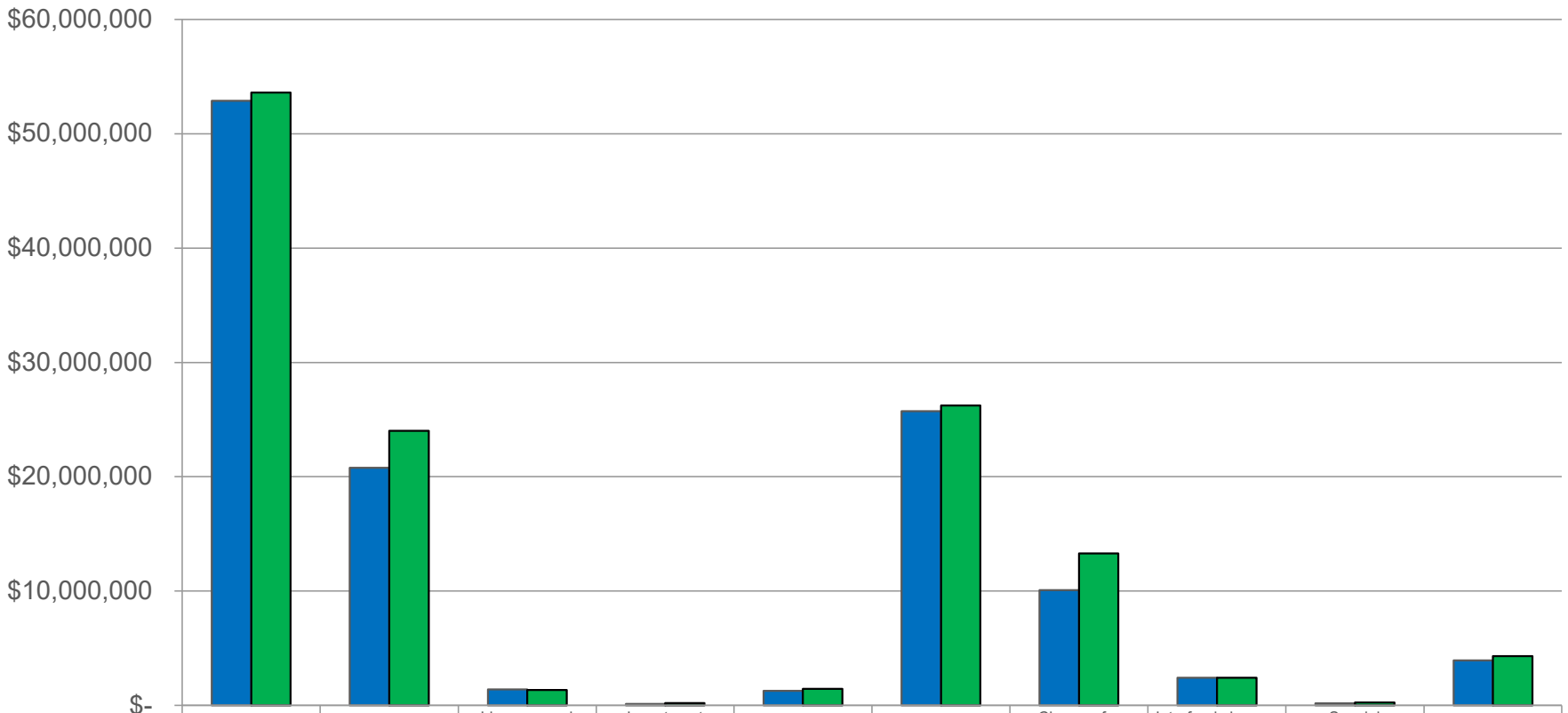
Revenue—All Governmental Funds

Total 2021 $118,762,986

Total 2022 $127,141,550



	Property Taxes	Other Taxes	Licenses and Permits	Investment Income	Rent	Intergovernmental	Charges for Services	Interfund charges for Services	Special Assessments	Miscellaneous
2021	$52,877,346	$20,765,591	$1,392,173	$124,727	$1,268,940	$25,735,011	$10,073,458	$2,416,493	$169,139	$3,940,108
2022	$53,591,030	$24,018,215	$1,345,096	$215,140	$1,458,217	$26,244,859	$13,279,053	$2,426,381	$248,787	$4,314,772

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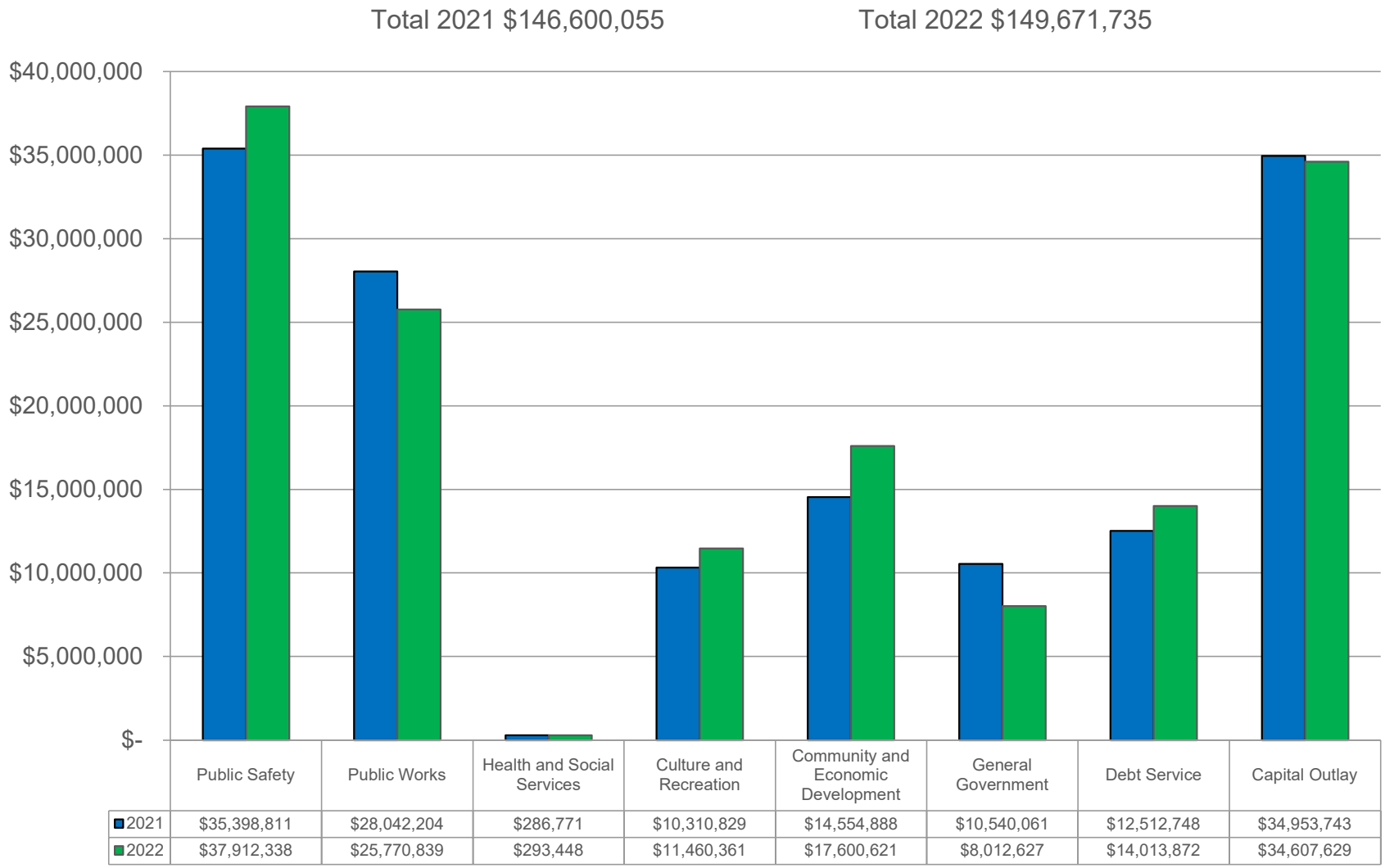
Expenditures by Function—All Governmental Funds



	Public Safety	Public Works	Health and Social Services	Culture and Recreation	Community and Economic Development	General Government	Debt Service	Capital Outlay
2021	$35,398,811	$28,042,204	$286,771	$10,310,829	$14,554,888	$10,540,061	$12,512,748	$34,953,743
2022	$37,912,338	$25,770,839	$293,448	$11,460,361	$17,600,621	$8,012,627	$14,013,872	$34,607,629

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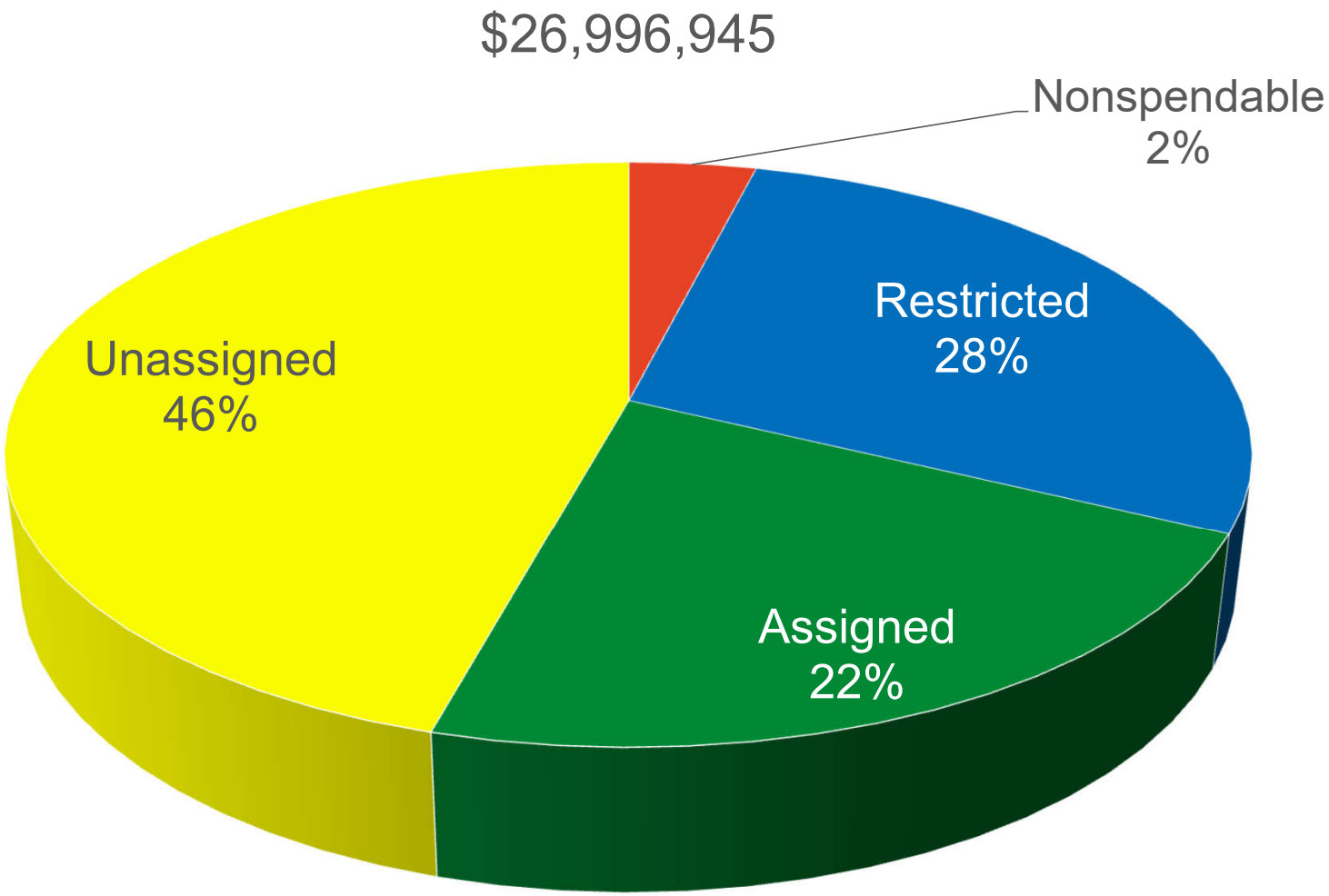
General Fund—June 30, 2022 Fund Balance



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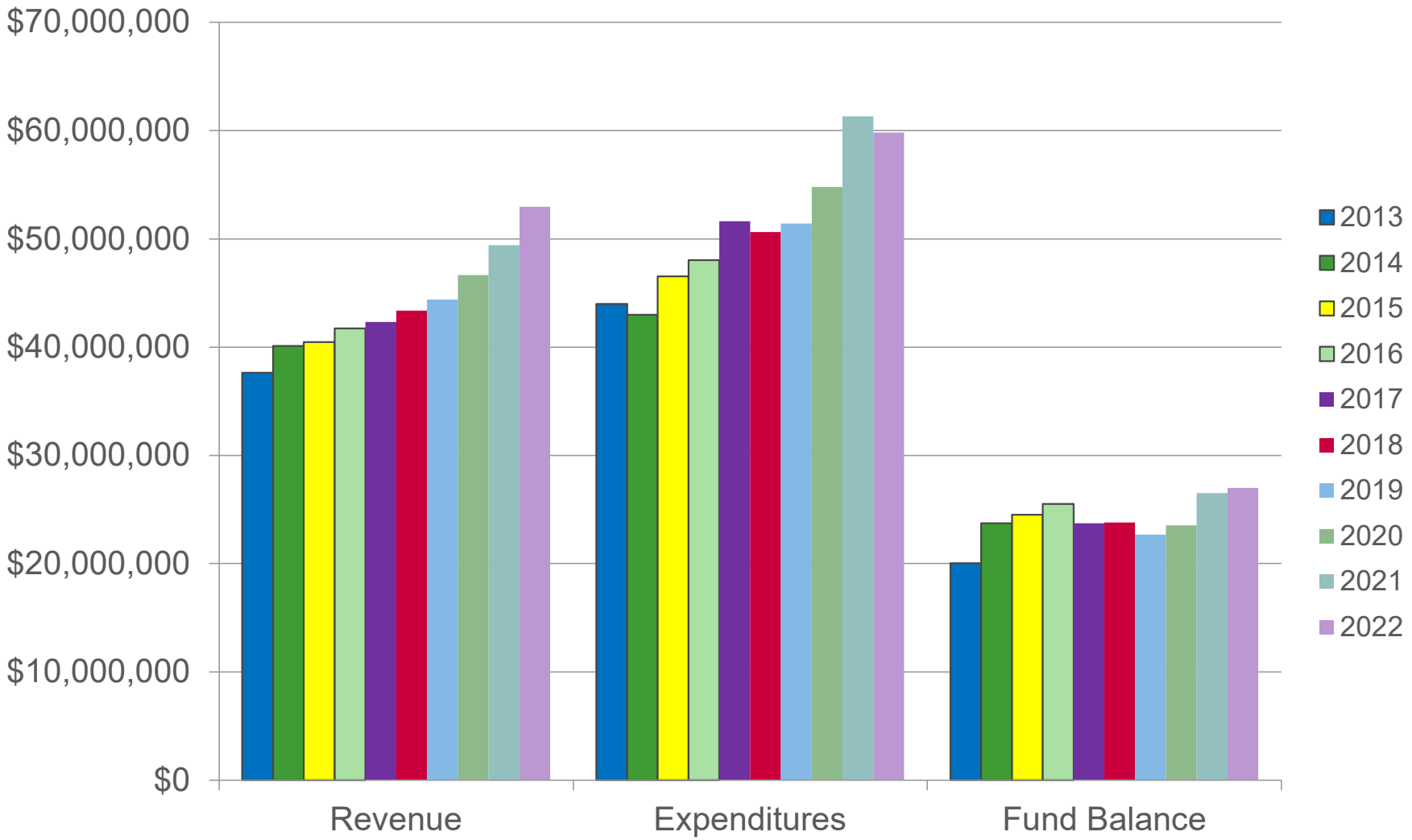
General Fund 10–Year History



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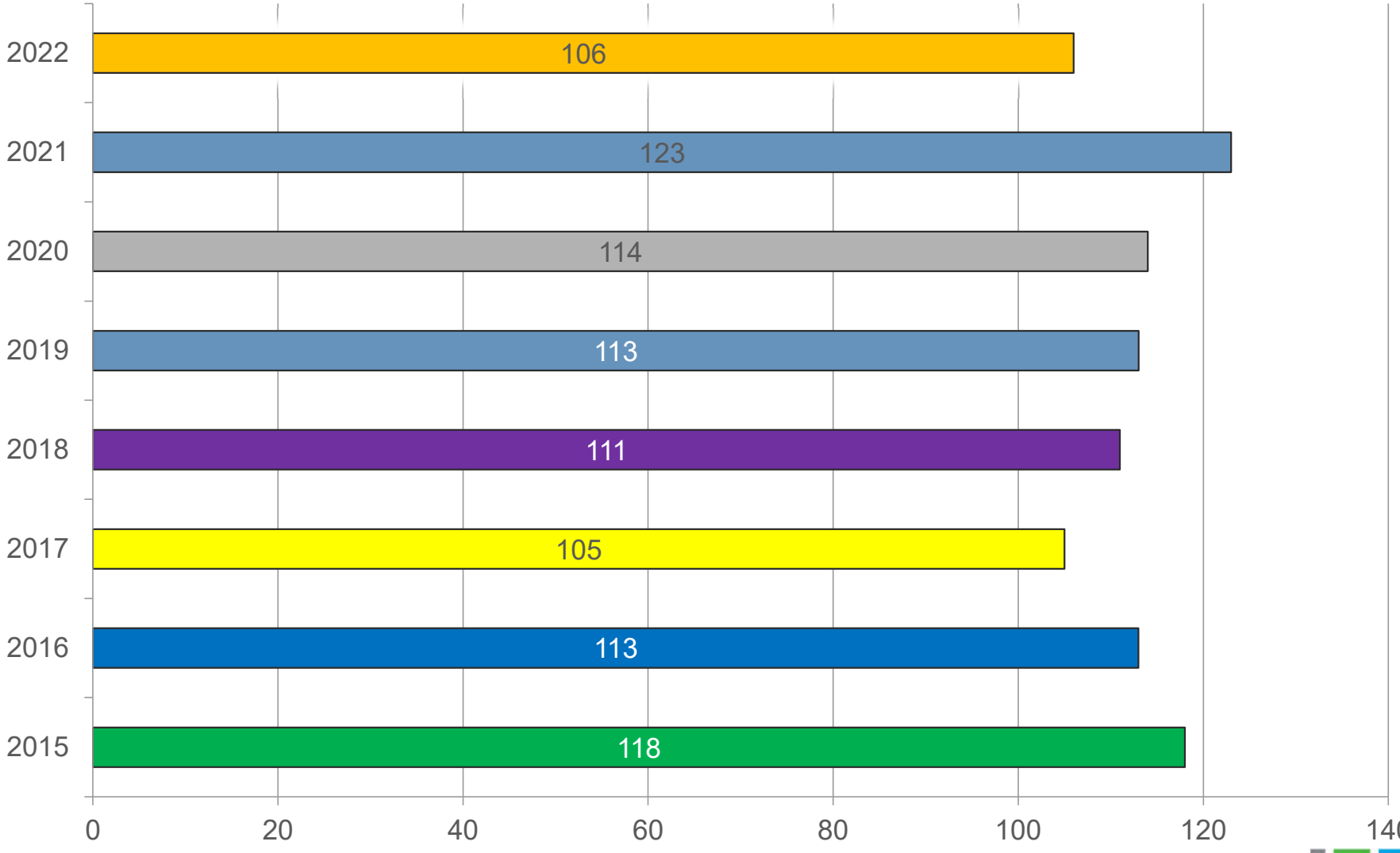
General Fund Balance, Unrestricted (In Days)



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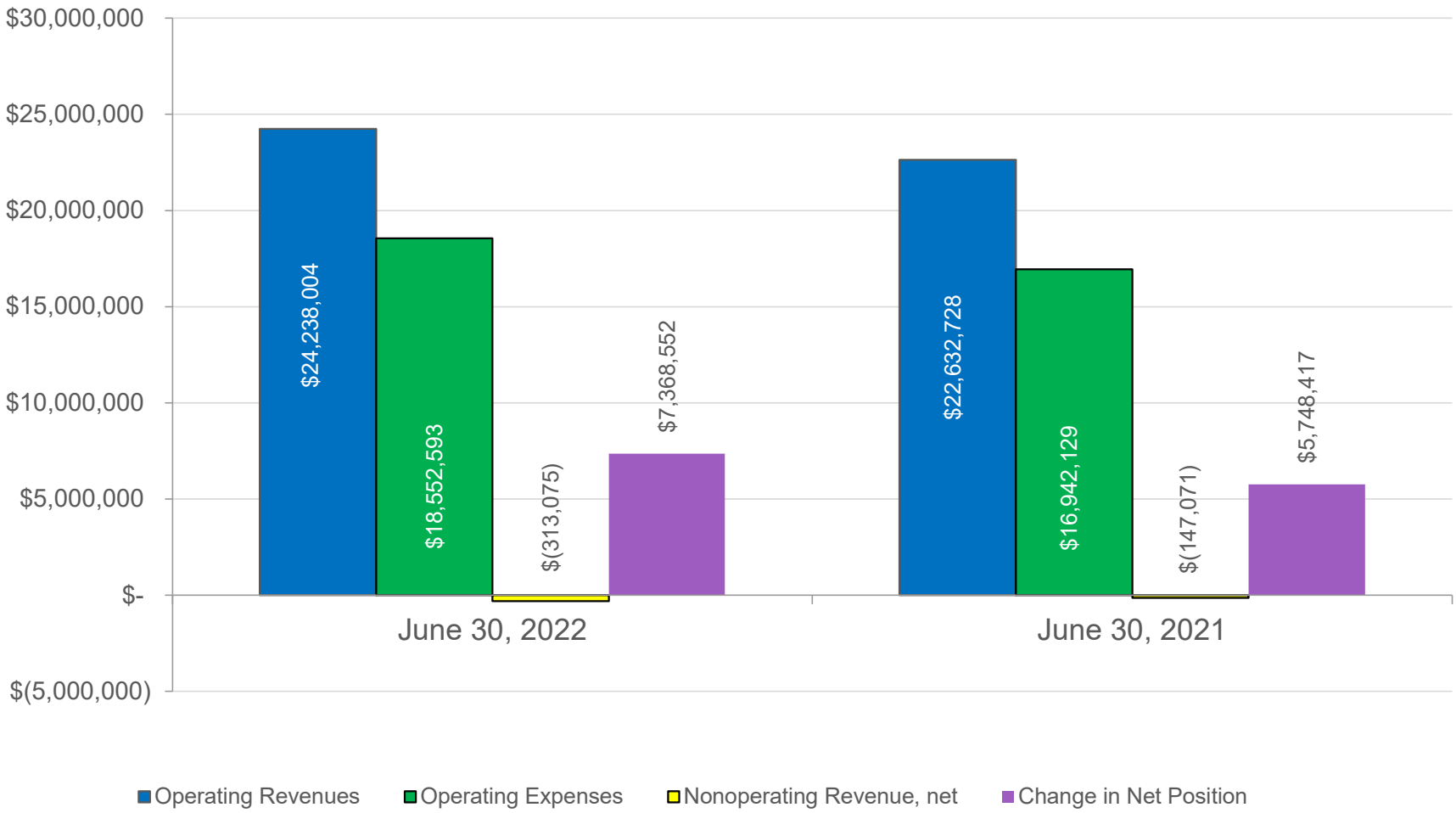
All Enterprise Funds—Operations



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Internal Control and Compliance Reporting

- Internal Control Over Financial Reporting
  - No significant deficiencies or material weaknesses over financial reporting reported
- PFC Compliance Reporting
- Single Audit
  - 3 Major Federal programs tested:
    - Lead Hazard Reduction Grant Program
    - Airport Improvement Program (includes COVID-19 funding)
    - Coronavirus State and Local Fiscal Recovery Funds (CSLFRF)
  - Unmodified (“clean”) opinion on major programs
  - No significant deficiencies or material weaknesses reported
  - 2 compliance findings reported for late report filings – Airport Improvement Program and CSLFRF

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Auditor Communications with City Officials

- Unmodified “Clean” Opinion Over the Financial Statements
- Management Judgments and Significant Accounting Estimates
- Adoption of GASB Statement No. 87, *Leases*
- Audit Adjustments—1 immaterial adjustment
- Passed adjustments—None
- Disagreements with Management—None
- Significant Issues Discussed with Management—None
- Difficulties Encountered in Performing the Audit—None

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THANK YOU FOR YOUR TIME AND ATTENTION

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QUESTIONS AND ANSWERS?

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RSM US LLP

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CITY OF WATERLOO

SMART CITY STRATEGIC ACTION PLAN

PREPARED BY HONEYWELL SUSTAINABLE CITIES

Version 0.9c, 23 March 2023

GEORGE KARAYANNIS, LEED AP

KIRK RABIUS, PE

PIONEER PARTNERS

Honeywell

ACCELERATOR FOR AMERICA

MAYOR HART INTRODUCTION LETTER (OPTIONAL)

The City of Waterloo strives for continuous improvement of the quality and efficiency of the services we provide our residents. Over the last few years we have implemented cutting edges technologies in some of our most critical departments: public safety, sanitation & waste management, and city planning to name a few. It is critical to our long-term success, and our fiscal responsibility to develop a comprehensive SMART CITY STRATEGIC PLAN to pull these systems together, avoid costly duplication and underutilization, and operate as a cohesive unit. In addition, we recognize that this is a unique point in history as Federal funding for these types of programs is abundantly available as never before. We must act now before these opportunities are gone.

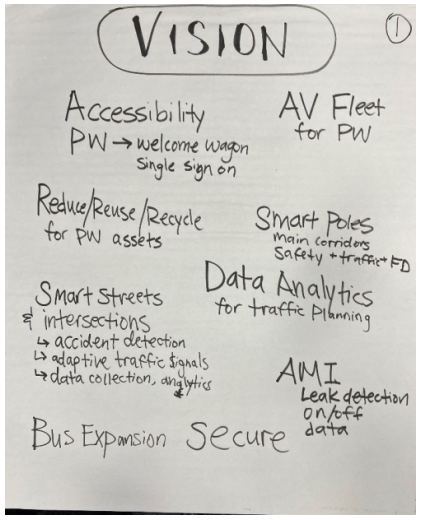
I am proud Waterloo was chosen by Honeywell and the Accelerator for America to participate in this Smart City Accelerator. It shows that we have the skill and the will to chart a bold path to the future. So many of our residents and stakeholders participated in the formation of this plan, demonstrating their desire to keep pushing forward. Their voices were heard and are reflected in this plan. My thanks to everyone who engaged at any level.

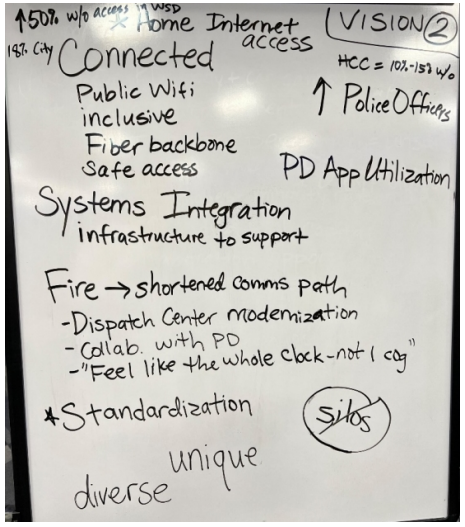
This plan is ambitious and courageous, but it is also 'doable.' We have already laid the groundwork for many of the recommendations and are seeing the benefits of SMART CITY technology in real-time cost savings and improved service delivery. Equally important is our ability to collect valuable data for continuous process improvement and more accurate planning.

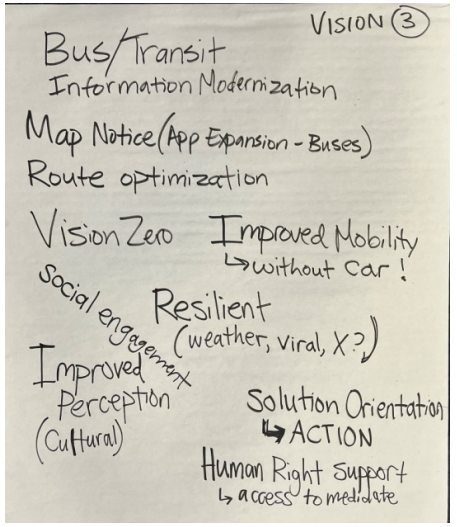
As we further develop this plan, I encourage you to stay engaged, ask questions, and provide feedback. This is our plan for our future.
– **Mayor Quentin Hart**

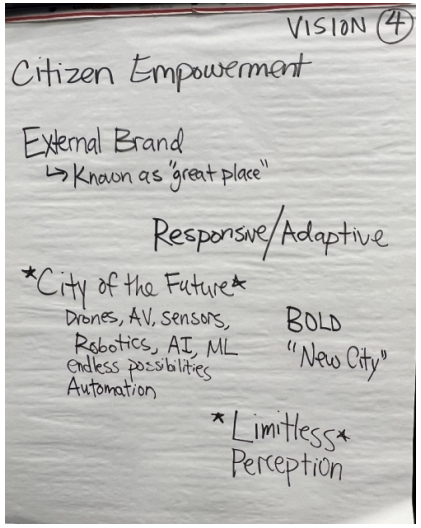
DISCUSSION AGENDA

- Transformation Reflections
- Summary of the Smart City Strategic Plan v0.9
- Recommendations
- Discussion





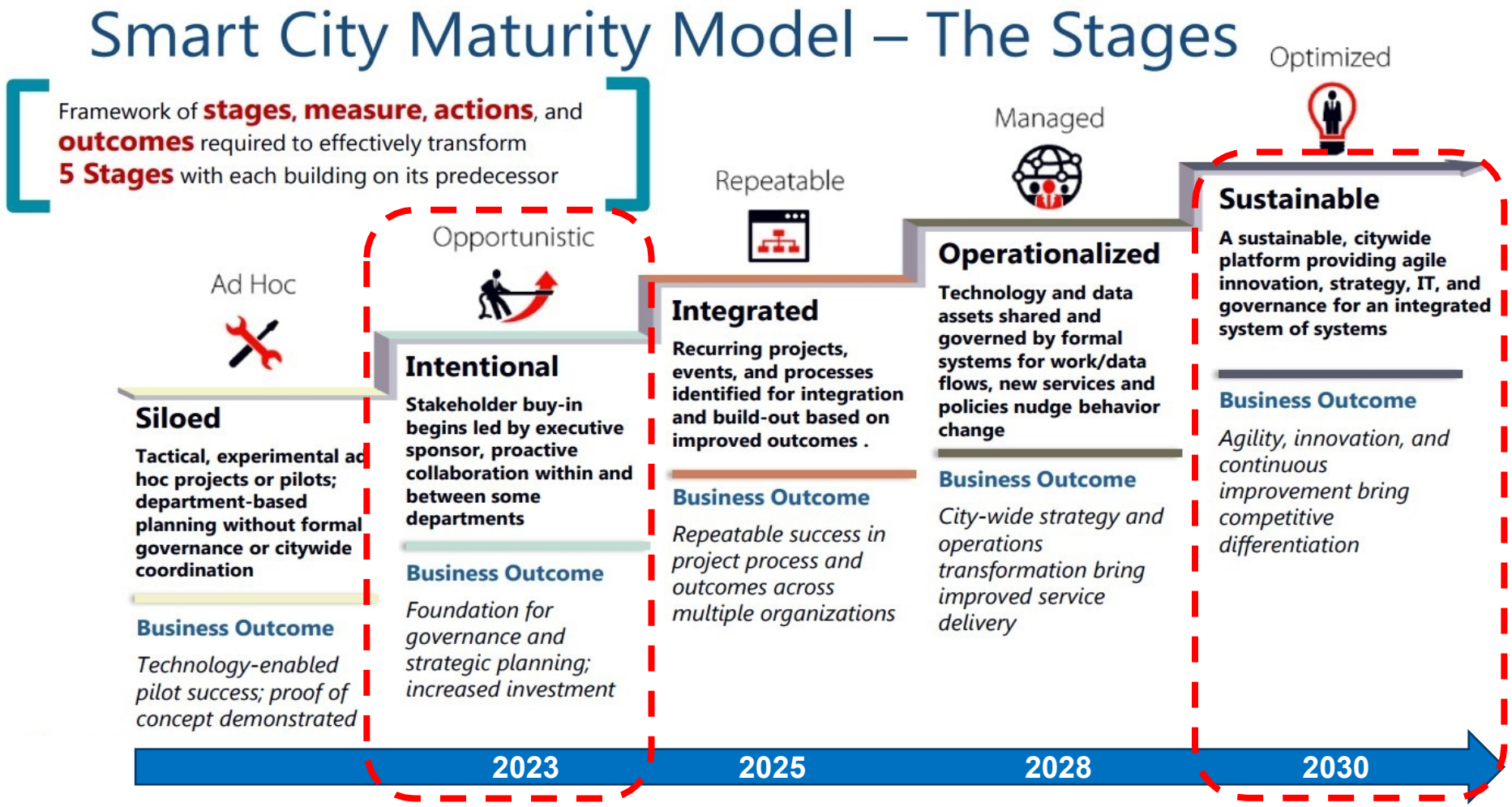




We heard you. Then we crafted a bold vision for Waterloo's future that enables Mayor Hart's desired transformational trajectory.

SMART CITY STRATEGIC ACTION PLAN – TRANSFORMATION MAP

- Waterloo today is ‘Intentional / Opportunistic
- Waterloo 2028 could be ‘Integrated / Repeatable
- Waterloo 2032 could be ‘Sustainable / Optimized’

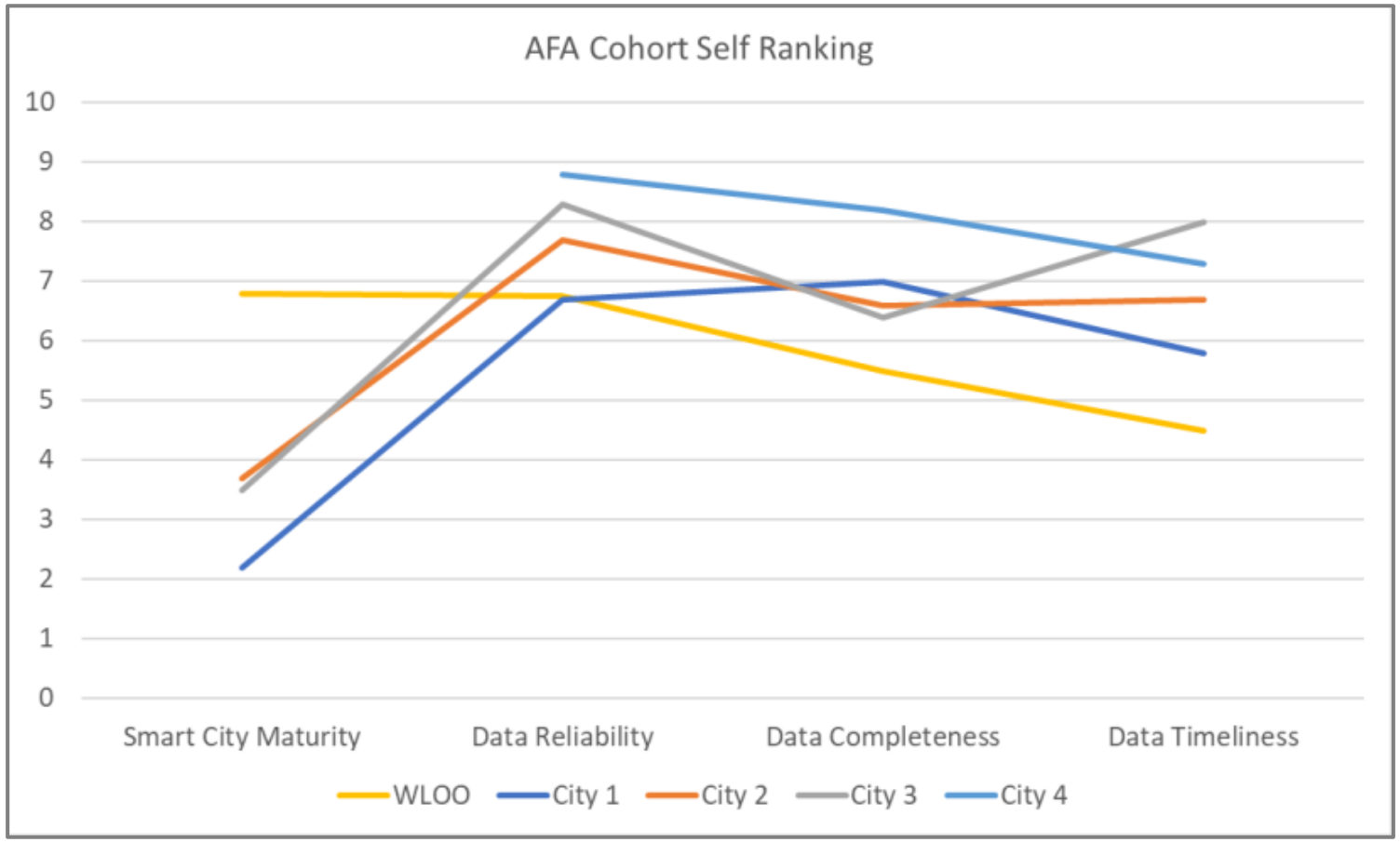


A 7-year roadmap to transform Waterloo into a first-tier city

AFA COHORT RELATIVE SELF-RANKING

Questions (on a 1-10 scale)

1. How ‘smart’ do you think your City is?
2. How reliable is the data you get?
3. Do you get all the data you need?
4. Do you get data quickly enough?



Waterloo is a more advanced smart city overall, but lags in data completeness & timeliness

WHAT WE HEARD DURING VOICE OF COMMUNITY

From City Leaders and Staff

*“How we could potentially get better at our own snow and ice control on our bridges and overpasses. And **instead of being more reactive, we could possibly be more proactive**.”*

*"My hope in what I'm doing is helping people be able to connect to resources...we could **use technology to help people better engage with local resources**.”*

*"There's a huge need and opportunity for **getting people to work other than by car**.”*

*“I think having a smarter city with interconnected systems would **give our citizens some ease that we are making the best decisions for the future**.”*

*“People still don't know what's happening. So, trying to create avenues to reach even further into our community, to be able to **share more data with people** in our community, not just sharing that data, but **also helping them to understand how that data has an impact on their daily lives.**”*

*“The city always has an issue with reputation. There's a **negative reputation across the state as far as not being safe**. In actuality, [it is] as safe as any other community of our size, if not safer.”*

*"Stigma"..."skeptical"..."low expectations"..."image problem"...were all descriptions of the **reputation challenges**.*

Across two dozen interviews we consistently heard a need for modernization of city operations, fully integrated resident engagement, and an improved city reputation.

WHAT WE HEARD DURING VOICE OF COMMUNITY

- **Residents generally live here due to a family connection**
- **Respondents like the activities, parks, fire department, and public library**
- **Areas that residents see room for improvement include the following (in order of most mentioned to least)**
  - Very concerned about safety and crime
  - Transportation-related (state of roads, speed cameras, transit options & hours, traffic lights)
  - Lack of entertainment, retail, restaurants and activities
  - Rundown housing and commercial buildings and landlord issues
  - Insufficient street lighting
- **General acceptance and curious optimism about smart city in Waterloo – it's something people desire**

Resident Survey

Ran for 14 days following two public events in November

293 survey responses and 395 total written responses were analyzed with notes from the live events

Resident Quotes:

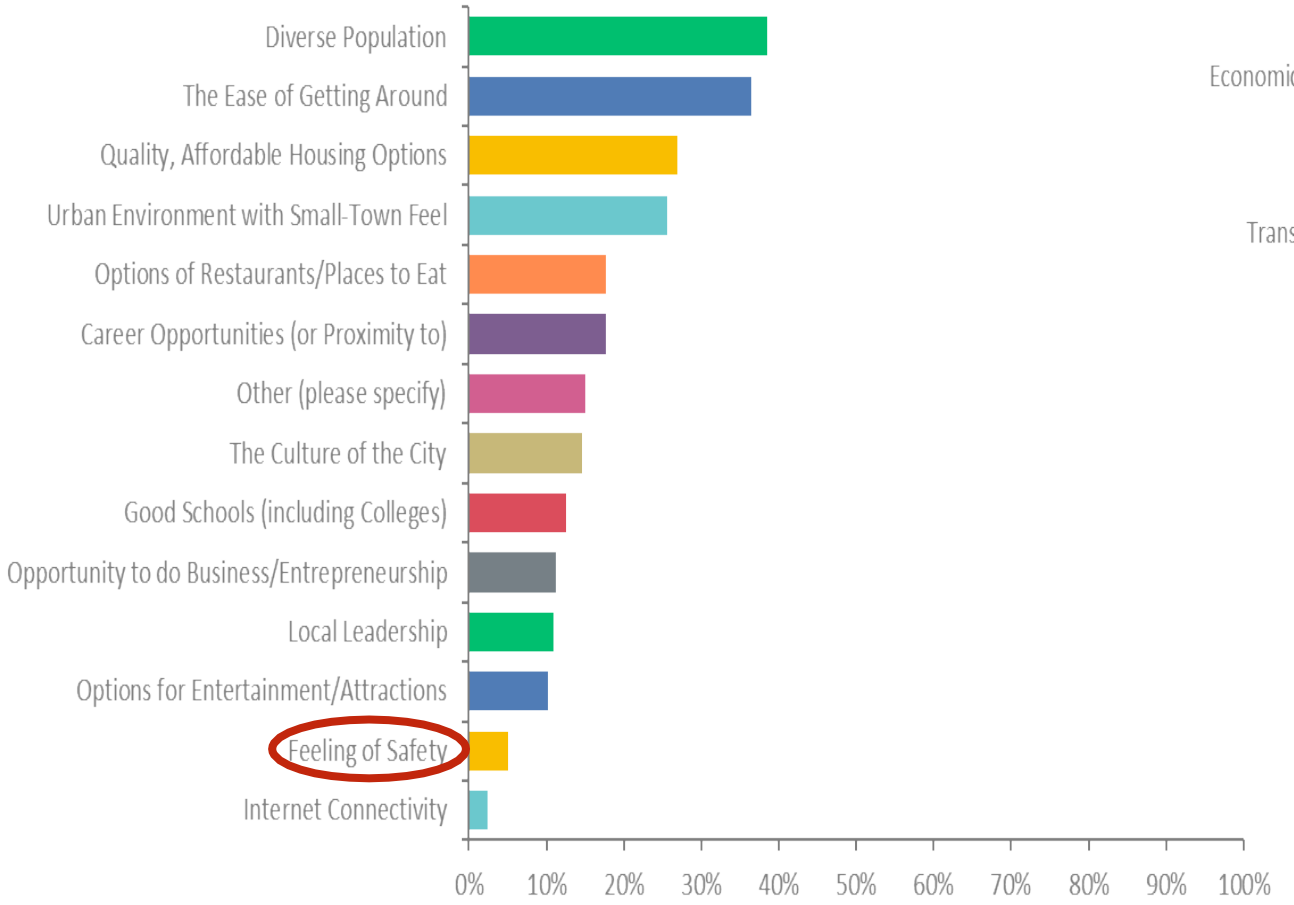
*"To me **it's more than 'technology'. That'll happen regardless -- we will be forced to modernize technology if we don't do it voluntarily**. What we will not be forced to do and what will make us a more modern, desired place to live is the amenities we offer as a community."*

*"Waterloo **deserves to be a city ready for the technological changes that are already here and will be here in the future**. But along with that, our **city needs to solve problems for residents, not create new ones**. As we grow, we need to grow our marginalized folk, making sure that people of all races, ethnicities, refugee statuses and others are not only invited to participate in this but actively are part of this process and are instrumental in creating any solutions that arise from the newly gathered data. Anything less is empty promises and a further entrenching of what has plagued it thus far."*

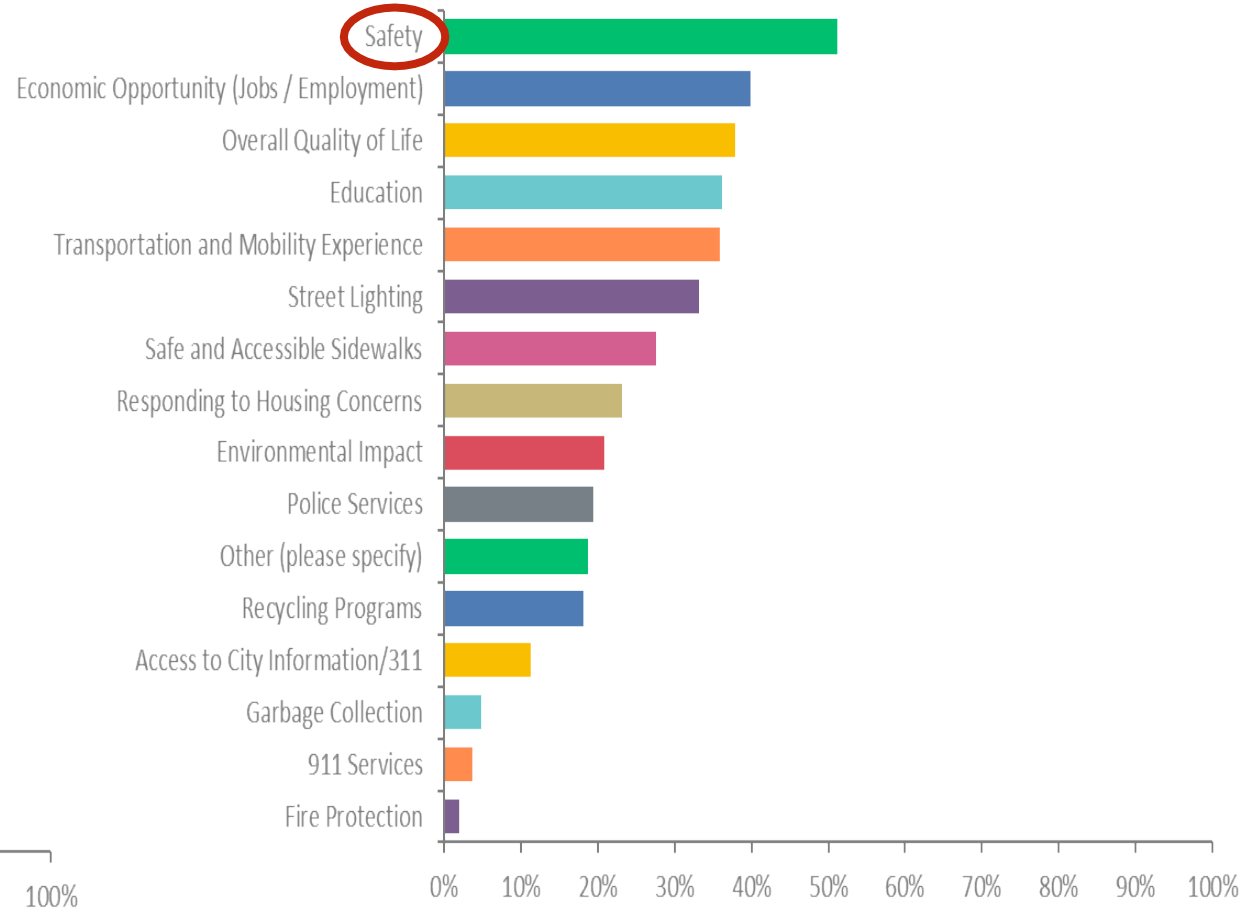
Significant data was gathered from the survey and incorporated in the Plan development.

WHAT WE HEARD DURING VOICE OF COMMUNITY

Like the Most About Waterloo



Would Like to See Improved or Changed



Significant data was gathered from the survey and incorporated in the Strategic Plan.

STRATEGIES TO COUNTER PUBLIC MISPERCEPTIONS

- **Data Visualization to Support Messaging, Especially re: Public Safety**
  - E.g., Optimize Police Department Assets & Complete Streets Recommended Smart City Projects
- **Resident-Friendly Messaging as Part of Multi-Pronged Communications Strategy**

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SMART CITY STRATEGIC ACTION PLAN – SUMMARY

"Waterloo's Smart City Strategic Action Plan is a comprehensive, integrated, and thoughtfully phased approach for transforming Waterloo by addressing the City's immediate operational challenges while establishing a strategic foundation for the future."

Mary Ellen Wiederwohl, Accelerator for America CEO

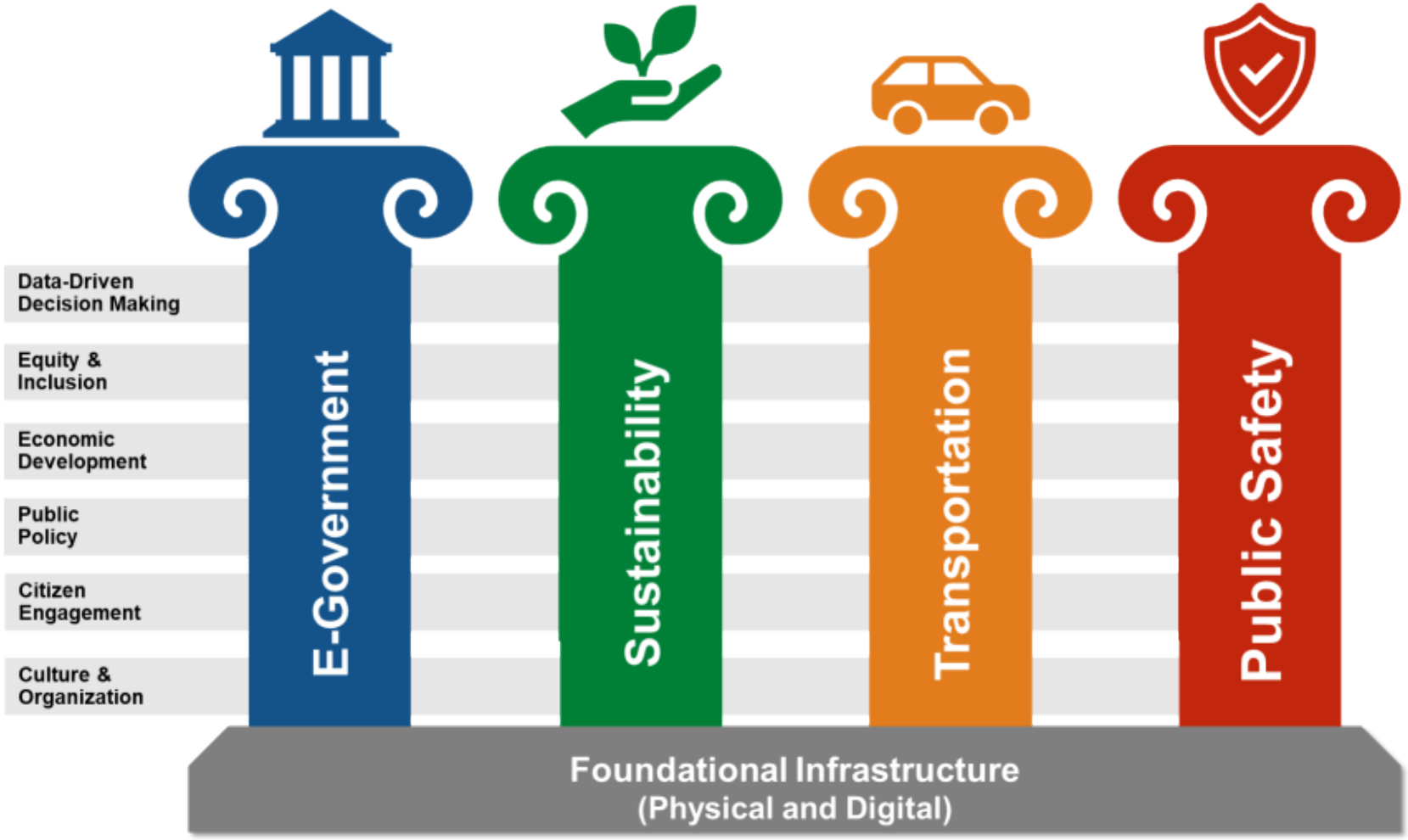
- **Ambitious Yet Achievable 7-Year Smart City Strategic Action Plan**
  - Addresses city's key challenges and provides integrated Smart City approach
  - Note: 'smart city' is not a separate thing, it is a *journey of continuous change management* (budget, policies, staff)
- **Provides Roadmap for Waterloo to Objectively Become First-Tier Smart City (ISO 3712X)**
  - Enables Waterloo to more effectively deliver essential city services & ROI now while building world-class capabilities
- **12 Recommended Smart City Projects Can Transform Waterloo's Quality of Life**
  - Some enhance or expand existing plans & capabilities, and some create new capabilities; all help transform the City
  - Projects can be accelerated depending on City priorities and resources (e.g., Smart City Testbed)

Recommend Council adopt Strategic Plan v1.0 in April.

SMART CITY STRATEGIC ACTION PLAN – SMART CITY MODEL

- **Foundational Infrastructure**
  - Enables strategic advantage (e.g., Chattanooga municipal fiber)
  - Physical: fiber, grid, light poles…
  - Digital: smart city platform…
- **Solution Pillars**
  - Often overlap yet still helpful model for categorizing projects
- **Cross-Cutting Themes**
  - Critical lenses to view potential impacts from any project
  - Help ensure projects are understood and evaluated holistically

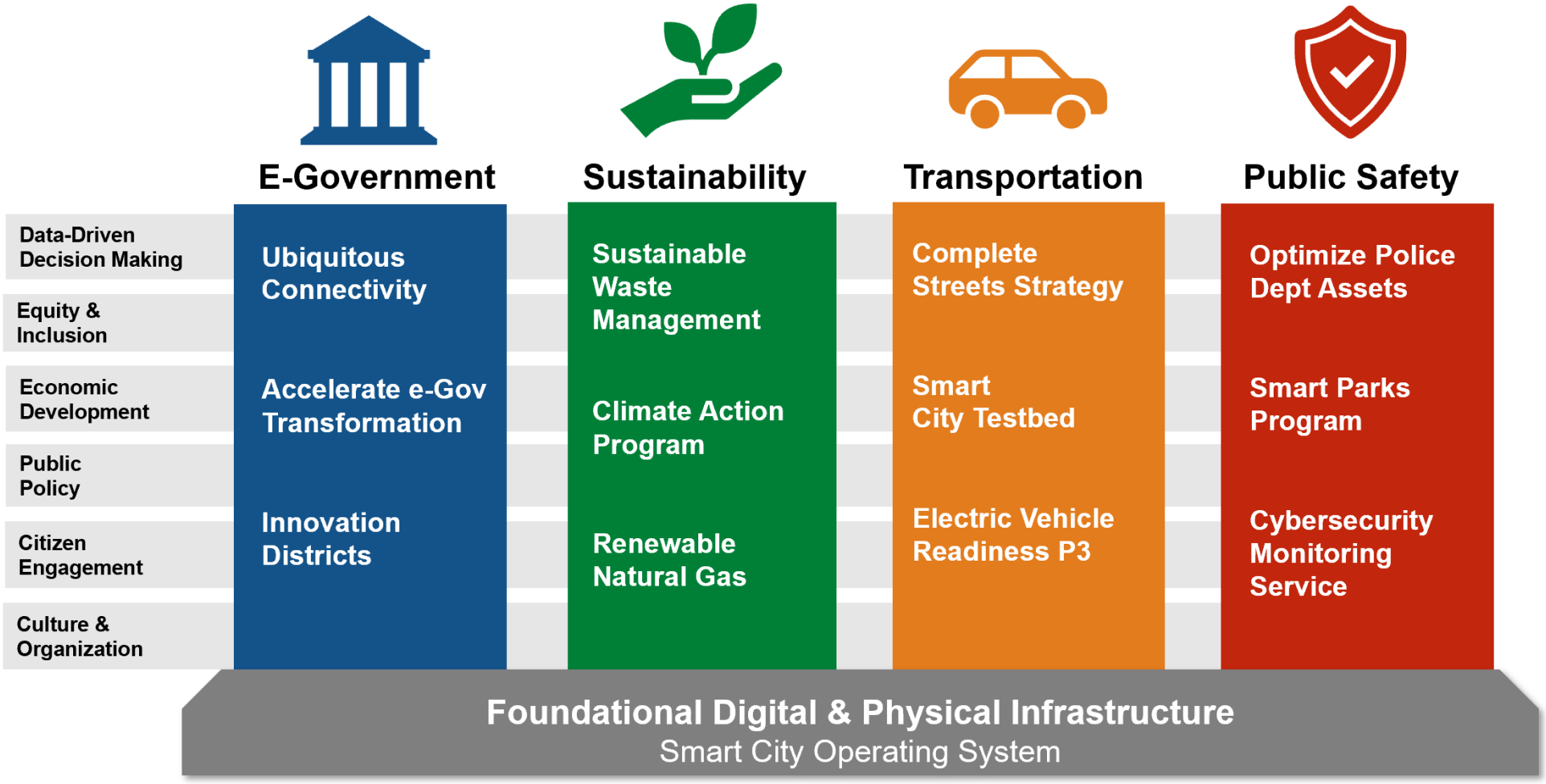
Smart City Pillars and Cross-Cutting Themes



A framework for thinking about all future investments, policies and processes

SMART CITY STRATEGIC ACTION PLAN – PROJECTS & PILLARS

Recommended Smart City Projects Mapped to Smart City Pillars



Recommended Smart City Projects address current and future city challenges

ACCELERATE UBIQUITOUS CONNECTIVITY PROGRAM

Problem Statement

- Residents currently experience overpriced, unreliable internet options making it difficult to retain and recruit young populations to the community and sustain economic development. Waterloo's current and future OT/IT systems need complete, reliable and secure internet connections (i.e. digital infrastructure) to increase operational efficiency.

Recommended Solution – Expand Connectivity Strategy

- Waterloo's current strategy for middle mile and Fiber-to-the-Home/Premise (FTTH/FTTP) buildout is expected to take three years and $115 M to complete. Residential connectivity will increase the quality of life, educational and job opportunities.
- Implement a branded, public Wi-Fi program in key public areas, especially downtown (2030 Vision - Power Up Downtown!) and public spaces to complement the **Waterloo Municipal Communications Utility (MCU)**
- Explore the feasibility of other connectivity options (point-to-point, 5G, CBRS, etc.) to fill in gap coverage and prepare for the future of connectivity demands (autonomous vehicles, IoT, etc.)

Expected Benefits

1. Accelerated and expanded connectivity, especially for households with no or poor internet
2. Increased economic activity and improved visitor experience with Wi-Fi as placemaking amenity
3. Increased operational and technical readiness for future connectivity technologies

This project modernizes our city and unlocks economic value.

ACCELERATE E-GOVERNMENT TRANSFORMATION

Problem Statement

- For residents interacting with the city is cumbersome and inefficient with few electronic options available for service requests, permitting, and payment options. E-commerce and translation services for a growing immigrant population are basically nonexistent.
- The City has 557 FTEs, not enough to meet the needs of 66,941 residents, and limited financial resources. With limited resources, the City needs to be much more efficient and effective with communications and delivering services.
- Many of Waterloo's key services and departments are not digitally accessible. For example, Public Safety (the largest portion of the 2023 budget) provides 5 services yet does not have an alternative option other than phone or email to request services (especially non-emergency services). The City is not aligned with the modern needs of residents. The lack of technology-enabled services inhibits data driven decision making and operational efficiency.

Recommended Solution – Implement Digital Transformation Solutions

- Implement a 311 system and Smart City Operating System to provide residents and businesses a modern, people-centric portal and mobile application (mobile web app or native app) to communicate with the city that feeds digital back-office operations.
- Bring all city services online to streamline services requests and focus initially on departments that have higher reliance on personnel costs or labor gaps to serve Waterloo's 61.4 square mile service area.

Expected Benefits

1. Improves service delivery and makes more services available to residents
2. Increases resident and business engagement and satisfaction, making Waterloo a city that is 'easy to do business with'
3. Reduces cost by streamlining operations, reducing inefficiencies & automating workflows
4. Accelerates City Hall modernization and maximizes value of data to support data driven decision making
5. Future-ready integrated architecture increases organizational flexibility, which also helps prepare for future unforeseen crises

This project modernizes City Hall, makes our city future-ready, and improves resident satisfaction.

IMPLEMENT COMPLETE STREETS STRATEGY

Problem Statement

– Residents want a safer, more connected mobility experience, and businesses want to streamline the flow of goods.
– City staff need advanced technology tools to further reduce traffic accidents towards Vision Zero strategies and zero fatalities goal beyond what can be done with current paper-based workflows, traditional tools, and IT systems that do not readily interoperate traffic safety.

Recommended Solution – Create a Bold, Integrated Mobility Approach

- Implement a digital twin city and using AI based predictive crash models for existing conditions and to evaluate safety of new and proposed roadway and transportations projects online base on calibrated model for Waterloo conditions
- Integrate multiple intelligent transportation systems (ITS), connected vehicle (V2X) systems, Internet of Things (IoT) systems, city services, and resident engagement tools with a Smart City Operating System to reduce congestion and emissions, improve public safety, reduce truck accidents and congestion while streamlining city operations.
- Elements include public safety IT and operational technology integration with existing video cameras, predictive public safety and emergency response analytics, flexible notification functionality, and support for first responders with real-time access to intelligent assets.
- Interact with existing Complete Streets Advisory Committee to implement solutions.

Expected Benefits

– A safer city with safe streets for all users including motorists, pedestrians, bicyclists, scooter ric
– Streamlined traffic flow.
– Better cross-departmental coordination.

Zero Vision is an internationally adopted strategy to eliminate all traffic fatalities and severe injury, safety, health, equitable mobility for all.

VISION ZERO

This project will transform the mobility experience for residents and visitors.

DEPLOY INNOVATION DISTRICTS

Problem Statement

- Residents want greater job opportunities and business demands a skilled workforce.
- Waterloo seeks to implement it's 2030 Strategic Vision – Waterloo Works initiative, increase its tax base and reduce its reliance on the City's two largest employers (Deere & Company and Tyson Fresh Meats) and single largest industry sector (Agriculture) that employs 26% of Waterloo's employment. Waterloo also needs to provide opportunities for residents to develop new knowledge and modern work skills (including re-skilling older workers) and attract new industries and companies of all sizes (including startups and early-stage companies).

Recommended Solution – Develop Partnering Programs and Innovation Districts

- Create a strategic innovation program to attract businesses, diversify existing economic base, and develop a local innovation ecosystem.
  - Identify industry clusters and likely companies for innovation partnering including Ag/AgTech, Advanced Manufacturing, Logistics, and Financial Services.
  - Develop an innovation competition to catalyze partnering opportunities and attract new businesses to the Waterloo area.
  - Develop closer alignment with Hawkeye Community College, University of Northern Iowa, Waterloo Career Center, and Grow Cedar Valley to create a skilled workforce that can support key employment sectors (Ag Business Management, Animal Sciences, Information Technologies, Manufacturing and Engineering, etc.).
  - Work with the TechWorks Campus (Tech 1 or Tech 2) to develop a physical innovation workspace in conjunction with programs that support early-stage companies / startups. Locations should focus on providing comparative advantages for Waterloo and/or the activity needs, especially rail served.
  - Expand physical placemaking efforts, combined with innovation partnering programs, to the six industrial park areas to maximize value.

Expected Benefits

1. Creates a new, more vibrant city image that can boost civic pride while promoting Waterloo to new companies that may not have previously considered Waterloo as an option (skilled workforce, innovative and supportive of startups). **Community of Opportunity!**
2. Promotes more cost-effective economic growth with a deep knowledge base that is highly aligned with industry partners.
3. Creates new jobs and additional revenue which will help attract new residents, increasing the tax base.
4. Helps promote downtown, which can make the community feel more vibrant, attractive and progressive (especially compare to neighbors).

This project allows Waterloo to grow and diversify its economic base in support of the 2030 Community Vision.

OPTIMIZE POLICE DEPARTMENT ASSETS

Problem Statement

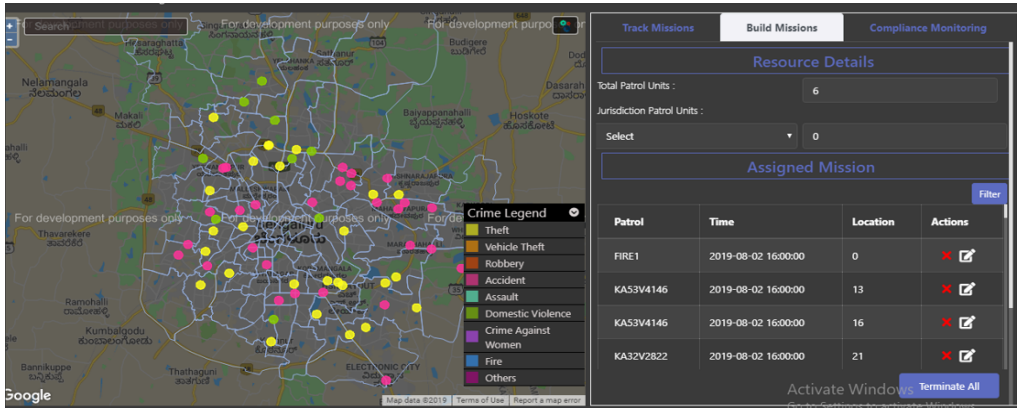
- Residents have an inaccurate perception that the crime rate for the City of Waterloo is higher than average. *
- Waterloo has limited staff and resources to expand its analytical capabilities and implement a Smart City Operating System.*

Recommended Solution – Enhance Existing Capabilities

- Integrate video cameras and other public safety sensor systems with advanced predictive analytics and a Smart City Operating System to better detect and respond to crime.
- Deploy a public communications strategy that promotes a more accurate understanding of crime based on factual statistics, data and research – helping to reduce misperceptions and increase transparency while building trust.

Expected Benefits

1. Reduced violent and property crime.
2. Improved response times for routine and emergency situations.
3. Improved asset utilization of officers and vehicles.
4. Improved public perceptions for a more accurate understanding of City safety.



This project helps us reduce crime across the city and improve our quality of life.

IMPLEMENT SMART PARKS PROGRAM

Problem Statement

- Residents and visitors want park and trail experiences that are equitable, engaging, and safe for all outdoor enthusiasts.
- Waterloo needs to modernize its park and trail systems to improve public safety, address physical health, drive economic development, improve air quality and reduce urban heat islands.

Recommended Solution – Deploy Tech to Deepen Park and Trail Experiences

- Integrate video, micro-mobility vendors, Community Wi-Fi, networked LED lighting, interactive kiosks, IoT sensors, city services, and citizen engagement tools powered by a Smart City Operations System in city parks and trail systems including Waterloo's two signature parks - Gates Park and Byrnes Park, the Cedar Valley's extensive trail system, Riverfront Sports Park, the Cedar Valley SportsPlex, Exchange Park, the Waterloo Riverfront Renaissance Trail, and Island Park.

Expected Benefits

1. Improved public health and wellness through greater community activity.
2. Improved safety and security for residents.
3. Seamless and more equitable mobility experiences for all.
4. Reduced transportation-related GHG emissions for improved air quality.
5. Greater use of Waterloo's park and trail systems (e.g., Atlanta BeltLine).

This project will transform Waterloo's park and trail amenities for residents and visitors.

IMPLEMENT SUSTAINABLE SOLID WASTE MGT

Problem Statement

- Residents have limited options for waste diversion, continue to put recyclables into main waste streams and want cost-effective disposal.
- Waterloo wants to better manage its landfill (which is a major source of emissions) and be seen as a leader on climate action.

Recommended Solution – Implement More Advanced Solid Waste Management Systems

- Continue to monitor trash collection pickup using RFID monitoring to make sure all revenue is captured that can be re-invested into new technologies and systems.
- Implement a compostable waste program and educate the public to increase awareness for new waste diversion opportunities such as food waste, upcycling, and reuse.
- Install smart sorting systems to separate recyclable materials from non-recyclable materials automatically.
- Deploy smart bins to ensure routes are optimized to reduce unnecessary vehicle miles traveled (VMT) and GHG emission by trash trucks.

Expected Benefits

1. Help reduced waste going to landfills, promoting sustainability and reducing the need for new landfill sites while increasing revenue.
2. Reduced carbon emissions which improves air quality and mitigates climate change.
3. Demonstrates climate action leadership, elevating Waterloo's image as a progressive city.
4. Increased efficiency: Smart waste collection systems can help optimize garbage truck routes, reducing time and fuel needed to collect.

This project allows Waterloo to reduce waste costs and demonstrate climate action leadership.

PROCURE MANAGED CYBERSECURITY MONITORING

Problem Statement

- Residents ultimately pay the price for compromised city OT and IT systems.
- As technology expands it is crucial to secure all systems from increasingly sophisticated cyber-attacks, especially given the increase in IoT devices throughout the city's networks
- With the rollout of City Broadband, being able to provide secure connectivity to citizens strengthens our status as the premier broadband offering in the Cedar Valley.

Recommended Solution – Strengthen Existing Capabilities

- Procure a managed cybersecurity monitoring service from a proven national security-focused firm to buttress existing systems, policies and procedures.
- Partner with the **Waterloo Municipal Communications Utility** to boost cyber security.

Expected Benefits

1. Waterloo's IT & OT networks remain better protected against cyber threats.
2. Waterloo can continue to provide essential city services uninterrupted.
3. Saves taxpayers money from denied ransomware attacks.

This project makes our city safer from cyber attacks.

DEPLOY IMMERSIVE SMART CITY TESTBED

Problem Statement

- Residents and other stakeholders struggle to understand the benefit of smart city initiatives which are often quite complex and interrelated (e.g., what exactly does ‘smart curb management’ mean for residents?).
- Waterloo lacks an integrated strategy and platform to thoughtfully evaluate future smart city technologies, and lacks an ability to co-create with residents, businesses, staff, and other key stakeholders.

Recommended Solution – Create New Capabilities

- Deploy a robust mix of smart city technologies including but not limited to smart parking, connected lighting, advanced metering, environmental, traffic and public safety sensors, interactive kiosks, smart trash, community Wi-Fi, augmented / virtual reality, EV charging infrastructure, etc. in a multi-block area collectively managed by a Smart City Operating System.

Expected Benefits

1. Increased stakeholder understanding, alignment, and support of smart city initiatives.
2. Enhanced departmental coordination, public policy development, and city workforce upskilling.
3. Creates foundation for a rich partnership ecosystem of private and academic organizations.
4. Visualization can educate & influence residents on public safety data.

This project will help us build the muscles needed to navigate a complex and ever-changing future.

IMPLEMENT P3s FOR EV READINESS

Problem Statement

- Local businesses are increasingly electrifying their vehicle fleets and need robust charging infrastructure.
  - With 57% of all delivery costs incurred from last-mile deliveries[1], Waterloo needs to deploy robust EV charging infrastructure along its highly-trafficked trucking routes to address EV charging demand for local manufacturers and distributors who are already making significant investments in decarbonizing their fleets.
  - Relevant examples: John Deere's fully electric tractor, called SESAM (Sustainable Energy Supply for Agricultural Machinery), with a 150kWh battery pack and 34-miles of range; and Amazon's purchase of 100,000 Rivian EDV700 EV delivery vans with 135-kWh battery pack and averaging 150-miles of range[2].

1. *Source: McKinsey, "Delivering the last mile: Today's challenges, tomorrow's opportunities", 2018*
2. *Source: Motortrend, "Take a Look Inside Amazon's New Rivian Delivery Van", November 24, 2022*

Recommended Solution – EV Fast-Charging Plazas with Smart Parking and Resilience Hub

- Partner with MidAmerican and/or private entities in a P3 delivery model/roadmap to build fast-charging plazas for fleet traffic along the Avenue of the Saints (US Route 20), Interstate 380, US Route 63, Iowa Highways 218 and 63. Include City owned assets like the Waterloo Regional Airport and 3 City golf courses.
- Integrate the EV fast chargers, IT and OT systems with a Smart City Operations System.
- Include an interactive smart parking app that allows fleets to secure parking spots in advance of arriving to the EV charging plaza.
- Integrate battery storage and PV with the EV charging plazas to create Community Resilience Hubs (CRHs) to increase community resiliency.

Expected Benefits

1. Enhances electric grid and transportation system reliability to meet upcoming EV demand.
2. Addresses range anxiety by deploying greater grid reliability at city scale.
3. Achieves greater community resilience to respond to extreme weather events.
4. Ensures EV charging availability for truckers in advance of arriving at the plaza.

This project will draw heavy duty EVs, increase the City's attractiveness, and improve community resilience.

DEVELOP CLIMATE ACTION PROGRAM

Problem Statement

- Residents are increasingly concerned with Waterloo's efforts to combat climate change especially related to long-term health effects (i.e., Waterloo's air quality is rated as 'moderate' and is consistently higher than national average of 40).
- Waterloo's current climate action resolution is not paired with an implementation plan. Addressing climate change is complex, requiring a well thought out plan with specific actionable strategies, tactics, and metrics to help ensure success towards any meaningful climate change goal across all departments. The lack of a clearly articulated strategy can waste time and money and create frustration while also producing subpar results.

Recommended Solution – Develop a Detailed Climate Action Implementation Plan

- Define a detailed plan with specific, measurable, achievable, and realistic goals aligned with city timelines. Identify technologies and systems that can be implemented at the asset level to identify which department will implement the climate strategy to include Rough Order of Magnitude (ROM) budgets. Possible partnership with University of Iowa CEEE.
- Partner with MET Transit's Comprehensive Transportation Plan strive for a Zero Emission Bus Service Plan.

Expected Benefits

1. Improves public health by decreasing air pollution.
2. Saves money on energy costs, waste management, and related expenses.
3. Creates green jobs and promotes economic growth by prioritizing sustainability and climate action to attract businesses and residents who value environmental stewardship.
4. Supports local employer sustainability goals.
5. Improves perceptions of Waterloo as a progressive city with a reputation as a thought leader, innovator and more progressive than peer cities.

This project allows Waterloo to expand and achieve its climate action goals and become a sustainability leader.

IMPLEMENT RENEWABLE NATURAL GAS PROJECT

Problem Statement

- Residents will increasingly experience poor air quality from increased methane gas generation as Waterloo's waste collection demands increase.
- The City is focused on managing methane gas in a responsible, prudent manner while also recognizing the economic development opportunities increased waste collection can create. High strength waste stream diversion strategies are of top priority.

Recommended Solution – Use Technology To Support Waterloo's Renewable Natural Gas Lagoon & Plant Program

- Assess feasibility of implementing a methane gas lagoon program. Tyson's effluent must be considered in evaluating the availability of organic waste and the potential for generating methane gas.
- Identify industry partners - especially financial as public-private partnerships may provide the best options. Create and operate the lagoon from collection of organic waste to anaerobic digestion to the capture and storage of the methane gas.
- Implement technologies to monitor gas collection, storage and transmission. Implement gas detection sensors nearby to ensure that GHG emissions are not escaping the collection system and supporting processes.

Expected Benefits

1. Reduces greenhouse gas emissions: RNG is a low-carbon fuel that can be used in place of traditional natural gas. By producing RNG from waste, the city can reduce greenhouse gas emissions from its waste management operations.
2. Generates revenue: RNG can be sold as a commodity and generate new revenue for the city.
3. Increase energy independence: RNG can be used to power city vehicles or buildings, reducing dependence on fossil fuels.
4. Improve waste management: The production of RNG requires the proper management of organic waste. Implementing an RNG lagoon can help improve the efficiency and effectiveness of the city's waste management operations, reducing the amount of waste sent to landfills.
5. Promote sustainability: Implementing an RNG lagoon can help the city promote sustainability and environmental stewardship.

This project allows Waterloo to reduce greenhouse gases while creating a new revenue stream.

RECOMMENDED PROJECTS – HONEYWELL'S WEIGHTED RANKING

#	Project Category	Community Impact	Operational Efficiency	Grant Alignment	Ease of Deployment	Economic Development	Relative Scoring
		25%	25%	20%	15%	15%	Weighted Score
1	**Accelerate Ubiquitous Connectivity Program**	10.0	9.0	10.0	6.0	10.0	**9.2**
2	**Accelerate e-Government Transformation**	9.0	10.0	8.0	8.0	9.0	**8.9**
3	**Implement Complete Streets Strategy**	9.0	9.0	10.0	7.0	7.0	**8.6**
4	**Deploy Innovation Districts**	9.0	8.0	7.0	8.0	10.0	**8.4**
5	**Optimize Police Department Assets**	9.0	8.0	8.0	8.0	8.0	**8.3**
6	**Implement Smart Parks Program**	10.0	7.0	8.0	8.0	8.0	**8.3**
7	**Implement Sustainable Waste Management**	9.0	6.0	9.0	7.0	9.0	**8.0**
8	**Procure Managed Cybersecurity Monitoring**	8.0	9.0	8.0	9.0	5.0	**8.0**
9	**Deploy Immersive Smart City Testbed**	8.0	8.0	9.0	7.0	7.0	**7.9**
10	**Implement P3 for EV Readiness**	7.0	7.0	9.0	8.0	9.0	**7.9**
11	**Develop Climate Action Program**	10.0	5.0	8.0	9.0	7.0	**7.8**
12	**Implement Renewable Natural Gas Project**	9.0	6.0	8.0	7.0	7.0	**7.5**
		10 - All 1 - Few	10 - Highest 1 - Lowest	10 - Highest 1 - Lowest	10 - Easiest 1 - Hardest	10 - Highest Impact 1 - Lowest	

Project weighting determines relative ranking; not intended to serve as single project lens

RECOMMENDED PROJECTS – WATERLOO'S WEIGHTED RANKING

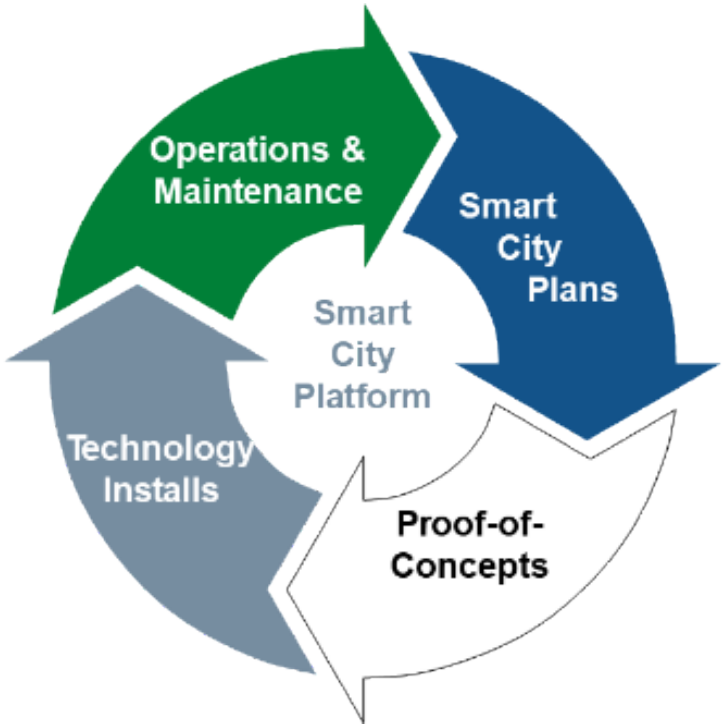
#	Project Category	Community Impact	Operational Efficiency	Grant Alignment	Ease of Deployment	Economic Development	Relative Scoring
		0.25	0.25	0.2	0.15	0.15	Weighted Score
1	Accelerate Ubiquitous Connectivity System	10	9	9	10	8	**9.2**
2	Optimize Police Department Assets	10	9	9	10	8	**9.2**
3	Implement Smart Parks Program	10	8	9	9	10	**9.2**
4	Accelerate e-Government Transformation	9	10	8	8	9	**8.9**
5	Implement Complete Streets strategy	9	9	10	7	7	**8.6**
6	Deploy Innovation Districts	9	8	7	8	10	**8.4**
7	Implement Sustainable Waste Management	9	6	9	7	9	**8.0**
8	Procure Managed Cybersecurity Monitoring	8	9	8	9	5	**8.0**
9	Deploy Immersive Smart City Testbed	8	8	9	7	7	**7.9**
10	Implement P3 for EV Readiness	7	7	9	8	9	**7.9**
11	Develop Climate Action Program	10	5	8	9	7	**7.8**
12	Implement Renewable Natural Gas project	9	6	8	7	7	**7.5**
		10 - All 1 - Few	10 - Highest 1 - Lowest	10 - Highest 1 - Lowest	10 - Easiest 1 - Hardest	10 - Highest Impact 1 - Lowest	

Project weighting determines relative ranking; not intended to serve as single project lens

WATERLOO SMART CITY STRATEGIC PLAN – ECONOMIC VALUE

25%
Improvement in annual O&M productivity when streamlined workflows are deployed

~4.5-7.5%
Reduction in annual operating costs when intelligent asset management strategies are in-place



4X
$1 worth of maintenance deferred could quadruple to $4 in saved capital renewal costs for the City.

Annual opex savings are driven by:

30-40%	15-20%	5-15%	5-10%
Predictive Maintenance Strategies	Recapitalization	Streamlined Work Processes	Holistic Capital Planning & Investment Strategies

Sources:

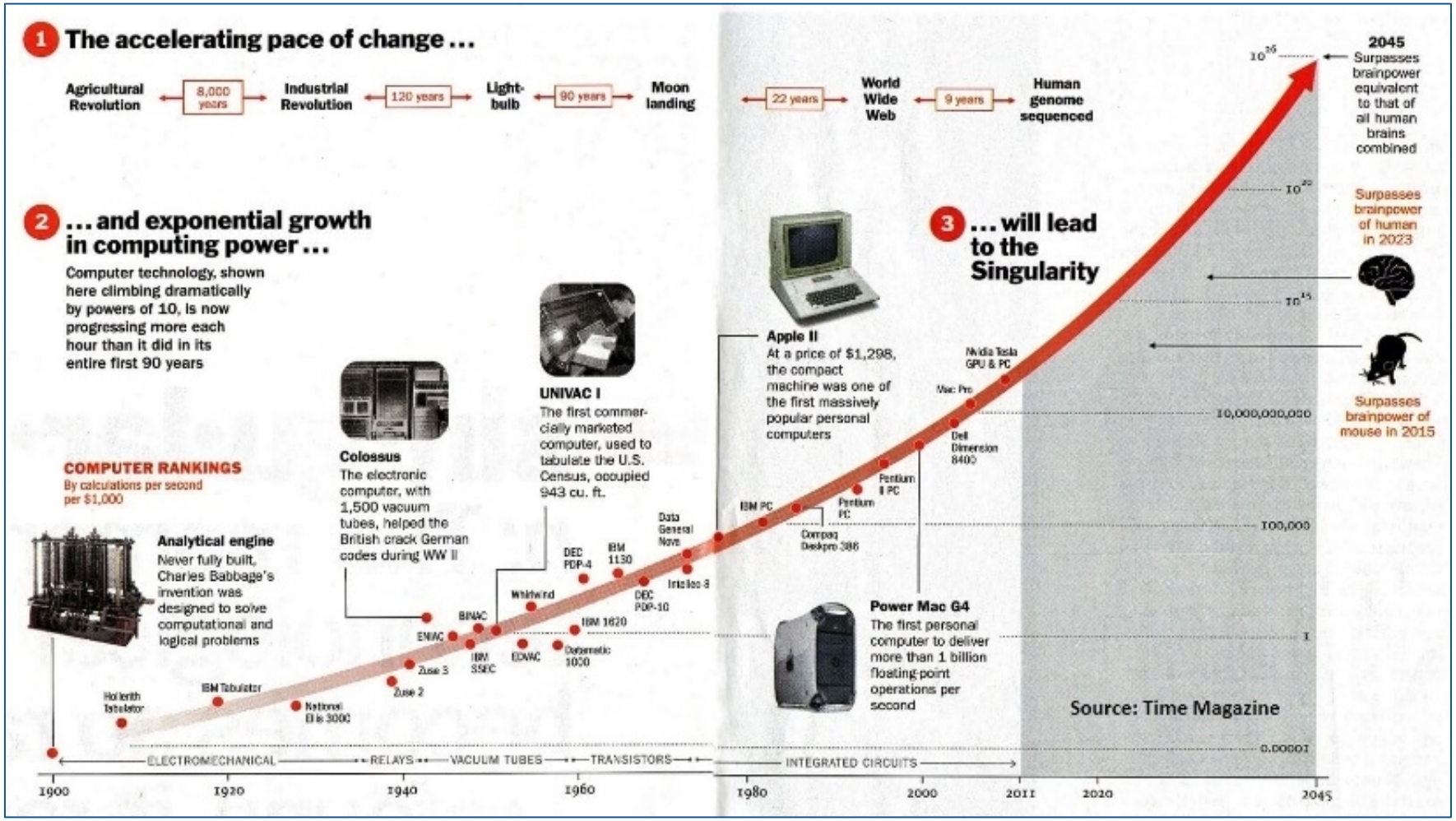
- *Accenture, "You'll reclaim the IT and ops gap with intelligent assets", June 13, 2022*
- *Jones Lang LaSalle, "High Cost of Deferred Maintenance – And How to Avoid It", June 5, 2019*
- *AECOM, $4B County of Los Angeles Deferred Maintenance Program for 88 Cities*

An integrated platform saves time and money

WATERLOO 2045 – MANAGING ACCELERATING RATE OF CHANGE

Tectonic Technology Shifts

- Remote Work
- Artificial Intelligence
- Augmented / Virtual Reality
- Robotics
- Fleet Electrification
- eVTOL (Flying EVs)
- Climate Change & Community Resilience
- Social Networks Impact on Public Safety



Source: Ray Kurzweil

Smart City Strategic Action Plan solve today's challenges & prepares City for tectonic shifts underway

RECOMMENDED PROJECT GRANT FUNDING FIT

SMART

Strengthening Mobility & Revolutionizing Transportation

- $500M / 5-yr DOT-led program
- No match
- Planning: <$2M
- Implementation: <$15M
- **First awards expected 2Q23**

S|S 4|A

Safe Streets for All

- DOT-led $5B program
- 20% match
- Planning: <$1M
- Implementation: <$30M
- **510 awards for $800M 1Q23** *($16M avg Implementation)*

Project	Grant Fit
Complete Streets Plan	SMART Stage 1 grants highly competitive (392 apps for ~40 awards in first tranche). SS4A awarded 473 Planning grants 1Q23 (ATL got $30M Implementation grant).
Cyber Monitoring	DHS or FEMA likely a better fit
PD Asset Optimization	Justice Department or DHS likely a better fit unless bundled with Complete Corridors Implementation Project
Smart City Testbed	SMART Stage 1 best fit ($2M) SS4A could also be a good fit ($1M)
Ubiquitous Connectivity	Department of Commerce may be a good fit
Smart Parks	Department of Commerce may be good fit
Waste Management	Department of Energy may be good fit
Climate Action Plan	Department of Energy may be good fit
Natural Gas	Department of Energy may be good fit

Not recommended for grant consideration:

- Streamlined e-Government Digital Transformation (OPEX funded)
- EV Readiness (P3 funded – possible grant opportunity)
- Innovation District (P3 / OPEX funded)

Next steps: 1) Review Strategic Plan for v1.0 submission. 2) Prioritize Projects. 3) Select grant focus.

APPENDIX – ISO 3712X GLOBAL SMART CITY INDICATORS

Theme	ISO 37120:2018	ISO 37122:2019	ISO 37123:20
Economy	11	4	7
Education	6	3	4
Energy	9	10	3
Environment and climate change	9	3	9
Finance	6	2	7
Governance	4	4	6
Health	6	3	4
Housing	10	2	6
Population and social conditions	9	4	5
Recreation	2	1	0
Safety	10	1	4
Solid waste	10	6	1

Tracking & reporting these indicators will objectively make Waterloo a smart city