DENTONS

ARCADIS

Smart Cities Sustainability Principles and Goals Checklist

Grow | Protect | Operate | Finance

In the pursuit of achieving their strategic goals and guiding principles, municipalities have a wealth of proven smart solutions at their disposal. These innovative approaches offer invaluable support in meeting and even surpassing their targets. By embracing these cutting-edge technologies and strategies, local governments can pave the way for a more sustainable, efficient, and prosperous future for their communities.

Together, Arcadis and Dentons can help municipalities define a Digital Master Plan and technology roadmap that aligns with their strategic goals. The below Smart Cities Sustainability Principles and Goals Checklist provides goals and the guiding principles that municipalities should keep in mind during the planning process.

If you would like to discuss this Checklist further, please reach out to either of the below contacts.

Key Contacts

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GOALS	GUIDING PRINCIPLES	⊘

GROWTH

Advisory solutions for sustainable growth

- **Smart Traffic**
  Installing Smart traffic lights that are connected via the internet to connect road users to the city grid using data from multiple sources and AI based detection for consistent up-to-date traffic measures, eliminating the need to re-time signals and accurately managing traffic variability. ☐
- **Autonomous Vehicle Infrastructure**
  AV infrastructure in our cities is crucial in promoting and supporting the use of electric vehicles and public transit. It can be completed in phases which initially implement basic roadway alterations for mixed-use traffic, then ensure road safety such as maintenance is up-to-date and later introducing mapping and infrastructure to support an AV city. ☐
- **Connected and Walkable Communities**
  A 15-minute community where everyday things such as work, food, housing, cultural activities and education, are within access and walkable or attainable without reliance of vehicles. ☐
- **Local Engagement**
  Leveraging technology to connect with those most impacted by land use and other proposed community changes, and facilitate simpler communication and comments between proponents, government and the community. ☐

PROTECTION

Protecting our environment and reducing risks of unsustainability

- **Smart LED and Night Sky Street Lighting**
  Installing LED street lights that light up only what is needed and only when it is needed to reduce excess lighting creating light pollution. ☐
- **Sustainable Transportation – Zero Emission Vehicles**
  Switching to transportation that uses renewable resources rather than fossil fuels, such as electric cars, busses and trains. ☐
- **Implementing Sponge City Principles**
  Implementing urban designs intended to absorb rain and prevent flooding, including rain gardens on commercial and residential properties to collect rainwater from roofs ad driveways to a low area in a garden, allowing it to be absorbed by the soil or later harvested and reused for irrigation. ☐
- **Smart Water Management**
  Installing AI-intelligence systems to remotely monitor in real-time and control wastewater at critical points of clean water delivery and sewer systems. Collection of such data will allow for issues to be identified and resolved in a timely manner, improving efficiency and reducing maintenance costs. ☐
- **District Energy Systems and Energy Transition Planning**
  Installing central district energy systems that produce hot water, steam and/ or cold water which flows through a network of insulated pipes to supply hot water or air conditioning for multiple nearby buildings in order to create economies of scale and reduce energy costs. ☐
- **Decarbonization Planning**
  Develop carbon reduction strategies to meet Provincial and Federal targets. This will include municipalities' own operations and the economic activities within them. ☐
- **Resilience and Adaptation Planning**
  Identify a plan in response to the impacts from climate change, with municipalities as key actors in implementing adaptation strategies. ☐

GOALS	GUIDING PRINCIPLES	✓

EFFICIENT OPERATION

Improving efficiency and offering consistency

- **High-Speed Internet**
  Providing individuals and the public and private sector with access to 5G high-speed internet through sponsorship and funding by the public sector and construction, financing and operation by the private sector, to enable smart city applications.
- **Energy Efficient Buildings**
  Designing and creating energy efficient buildings and homes that use different methods, materials and resources to reduce the amount of energy required to heat, cool, and run appliances and electronics (i.e. green roofs, insulated concrete, solar panels, programmable thermostats and correct window treatments).
- **Electric Vehicle Charging Stations**
  Providing Electronic Vehicle Supply Equipment (EVSE) in all parking lots, as a complete assembly consisting of cables, connectors, devices, apparatus, and fitting, installed for power transfer.
- **Smart Parking**
  In-ground Smart Parking sensors and cameras imbedded into parking spots, to detect, in real-time data collection, whether parking bays are available.
- **Smart Street Lighting Poles**
  Including e-vehicle charging stations, and data collection capability vs. privacy - what's in use.
- **Smart Transit**
  Solutions to electrify fleets, provide reliable data to users and AI routing to optimize service, such Calgary's C-train that runs 100% on solar power.
- **AI enhanced CCTV**
  AI enhanced CCTVs provide smart cities the statistics to assist transportation plans – bike lanes, pedestrian areas, aligned street lights – or to implement security measures as permitted by law.
- **Open Data**
  Providing citizens with direct access, through a secure account, to the personal information the city holds on them increases transparency and accountability as well as it provides improved access to services.
- **Public Amenities Apps**
  Whether to be informed of service flow, service interruption or service availability, smart cities develop apps for their citizens to know public transportation schedule and status in relation to schedule, to book assisted transportation or common transportation, to be informed of incidents or to receive alerts.
- **E-Payment**
- Particularly for transportation, cities offer e-payment to ease entry exit and secure payment for use of city services.

FINANCIAL STABILITY

Sustainability measures reducing financial burden

- TEIGs / Tax Increment Financing
- Public Private Partnerships Revisited and Revised
- Transit Oriented Communities and the Role of Infrastructure Ontario
- Smart Cities and Smart Pro Formas for New Projects