

Sustainable Solutions for Local Government

Answers for Infrastructure, Economic Development & Quality of Life

City of Peoria Presentation, April 26th, 2011

Agenda



- Trends & Implications for Sustainable Cities
- What makes a City Sustainable?
- City of Peoria Goals & Objectives
- Sustainable Infrastructure Programs
- The way forward

Anything is Sustainable....But at what cost?



"Our entire operation is sustainable except for our cash flow."

Trends are challenging the cities' future

Trends



Population Growth and Demographic Change

Rapid population growth:

- 2007: 6.6 bn. people
- 2050: 9.2 bn. people

Increase of live expectancy:

- 2007: 7% } of persons aged 65 and older
- 2050: 16% }



Urbanization

- 2008: 3.3 bn. people (for the first time more than half of the world's population) will live in cities
- 2030: 5 bn. people (60% of total population) will live in cities



Rising Costs of Natural Resources

- Growing economic activity causes depletion of natural resources & production of greenhouse gases
- Cities are responsible for about 80% of greenhouse gases
- Currently, 25% more natural resources than the earth can yield at a sustainable rate are used

Challenges

- Economic activity will increase
- Growing demand for health- & elder care
- Per capita healthcare costs will rise

- Rising need for sustainable infrastructure solutions in a city
- Increasing mobility
- Limited ability to deliver needed results due to budget & resource constraints

- Increasing scarcity of natural resources
- Growing need for environmental care
- Challenge to reduce the irresponsible consumption of natural resources
- Increasing need for energy efficiency

Trends' challenges affect infrastructure of cities

		Affected infrastructure of a city				
		Traffic & Transportation	Water & Wastewater	Energy	Healthcare	Safety & Security
Challenges of trends ¹⁾	Growing demand for health- and elder care		Water-borne diseases		Need for efficient healthcare systems	
	Increasing mobility	Traffic jams		Increasing energy demand of transport	Mobile care & health monitoring	Increase of road accidents
	Growing demand for safety and security	Safety of mass transport	Terrorist attack on water supply	Continuity of electricity supply	Medical care in emergencies / crisis	Increasing need for surveillance
	Increasing scarcity of natural resources	Energy cost increase of transport	Sinking ground water by over-extraction	Cost increase of energy generation		
	Growing need for environmental care	Air pollution through cars	Contamination of ground water	Need to improve energy efficiency	Diseases through toxic substances	



- Cities have to master their most vital challenges
- Dedicated solutions must be comprehensive, sustainable, efficient, innovative

City managers encounter strong dependencies among trends & challenges

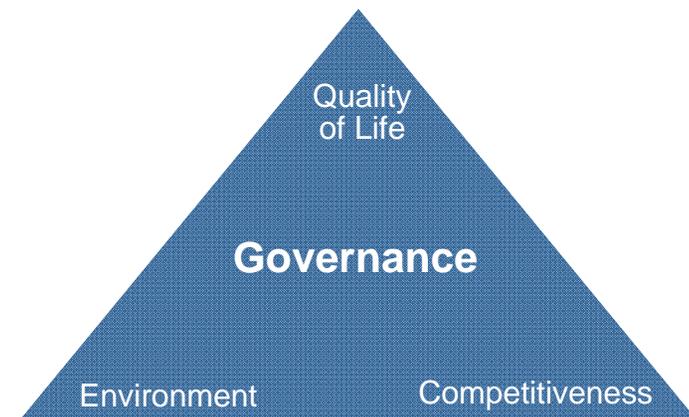


Trends / Challenges

- **Population Growth / Demographic Change**
 - Economic activity will increase
 - Growing demand for health- & elder care
 - Healthcare costs will rise
- **Urbanization**
 - Rising need for sustainable infrastructure solutions in a city
 - Increasing mobility
 - Budget & Resource constraints limit ability to deliver needed results
- **Climate Change**
 - Increasing scarcity of natural resources
 - Growing need for environmental care
 - Challenge to reduce irresponsible consumption of natural resources
 - Increasing need for energy efficiency



Sustainability



- **Holistic city planning** and **governance** will lead to sustainable development
- **Challenge** for **city managers** is to **balance** between three overriding concerns: Economic competitiveness, environment, quality of life
- New infrastructure relationship model: **Public sector leadership** with **public and private delivery of services**

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Siemens insights into "how to become sustainable", jointly developed with major world cities



Perception studies

Megacity Challenges

- Comprehensive analysis based on interviews with over **500 city managers in 25 selected megacities**
- Urban infrastructure **trends and challenges** as well as **global best practices**

**New: The Sustainable Cities Challenge in Canada
ICT for City Management**



Comparative studies

Green City Index (GCI)

- **Index compares cities** across **8 dimensions of environmental sustainability**: CO₂, energy, buildings, transportation, waste & land use, water, air, governance
- Started in Europe and Latin America, **rollout USA in 2011**



Implementation studies

Sustainable urban infrastructure series

- **"How to become a sustainable city"** with focus on measures for **resource efficiency and CO₂ abatement**
- Examples:
London, Munich, Yekaterinburg, Dublin, Trondheim, ...



Perception Study: The Sustainable Cities Challenges

Study by Siemens, David Suzuki Foundation and GlobeScan

73% of experts consider **infrastructure renewal & upgrade, transportation issues, and infrastructure funding** to be the three most serious challenges facing their cities



73%

90% of experts rated **transportation as having the highest need for infrastructure investments** over the next five to ten years

90%

69% of experts consider their city to **be average or below average on adopting sustainable infrastructure solutions**

69%



Tom Rand
Practice Lead,
Cleantech and
Physical Sciences
MaRS Discovery
District

“The political fight of the century will be the pricing of energy.”

“There’s no question we have the capacity to do this intellectually; the question is whether or not our political systems can generate the intelligence that our scientists and engineers can.”



Peter Robinson
CEO
David Suzuki
Foundation

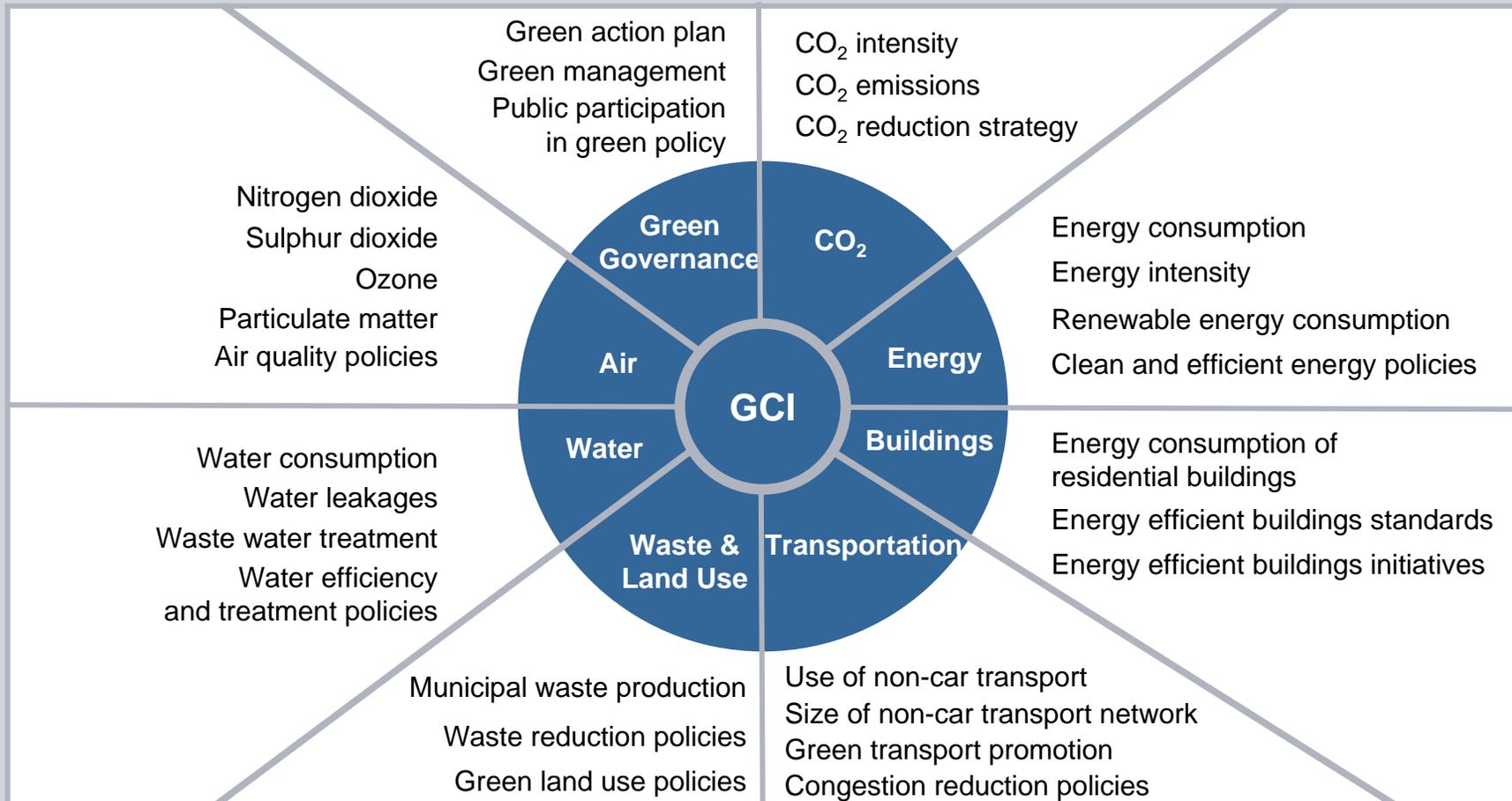
“At the foundation, we believe that investments to protect and enhance natural capital are urgently needed.”

“The David Suzuki Foundation encourages companies like Siemens Canada to continue their efforts to work towards a sustainable future.”

Green City Index – assessing the environmental impact of the United States major cities*



16 quantitative and 14 qualitative indicators in 8 categories were assessed



➤ **Prioritization of measures through identification of categories with performance below average**

*) A research project conducted by the Economist Intelligence Unit, sponsored by Siemens

City Profile Example: Singapore

Singapore_Singapore



Background indicators

Total population (million)	5.0
Administrative area (km ²)	710.3
GDP per person (current prices) (US\$)	36,519.6
Population density (persons/km ²)	7,025.2
Temperature (24-hour average, annual) (°C)	27.0

Data updated to Singapore

Singapore is a prosperous city-state on the southern tip of Malaysia, with a population of about 5 million people. Its residents are on average the fourth wealthiest among the 22 cities in the Asian Green City Index, generating a GDP per person of US\$36,500, nearly double the Index average. Services account for about two-thirds of the city's economic output, with industry making up just over a quarter. Singapore's government faces challenges in maintaining the city's economic success, however, including a lack of fossil-fuel resources and a limited water supply. And like many cities in Asia, economic growth must be balanced with environmental demands. The city's relatively large industrial presence, for example, contributes greatly to Singapore's wealth, but compared to the services sector, industry produces more waste, uses more energy and consumes more water.

Still, Singapore appears to have found a successful formula. It is the only city in the Index to rank well above average overall, and it shows consistently strong results across all individual categories, performing especially well for its policies to maintain and improve the urban envi-

ronment. Singapore's best performances are in the waste and water categories, where it ranks well above average. It has one of the highest rates of waste collection in the Index and the second lowest rate of water system leakages. Singapore ranks above average in all other categories, with particularly strong results for its large amount of green spaces per person, the length of its rapid transit network and its sanitation system. Overall, Singapore's impressive environmental performance is a legacy of its history. Since the city gained independence in 1965, the government has emphasised the importance of sustainability.

Energy and CO₂: Singapore ranks above average in the energy and CO₂ category. Cities with high incomes in the Index tend to produce more CO₂, and Singapore is no exception: The city generates 7.4 tonnes of CO₂ emissions per person, compared to the Index average of 4.6 tonnes. Industry is partly the reason. Although the industrial sector contributes just over a quarter of the city's GDP, it accounts for more than half of Singapore's CO₂ emissions. Singapore is

also one of five cities in the Index that does not consume any energy produced from renewables. It does, however, generate 80% of its electricity from natural gas, a cleaner source than coal, for example. The city's policies on energy and CO₂ are generally strong, however. For example, it gets full marks in the Index for having an energy reduction strategy, for making efforts to consume energy more efficiently, for having a climate change action plan and for signing up to international environmental covenants. The city is also relatively energy efficient, consuming only 3 megajoules per US\$ of GDP, compared to the Index average of 6 megajoules.

Green initiatives: In the last decade significant investments in natural gas pipelines have moved the city away from its dependency on high-emission, oil-fuelled power stations. In 2008 natural gas plants accounted for 80% of electricity generation, up from 19% in 1999. The construction of a liquefied natural gas import terminal is expected to allow Singapore to generate 90% to 99% of its electricity from natural gas by 2013. Regarding waste-to-energy pro-

jects, Singapore also has Asia's largest "anaerobic digestion" facility, which uses microorganisms to break down biodegradable material. It processes around 800 tonnes of organic waste per day, reducing the amount of food that Singapore incinerates by 50%, and the resulting methane is used in power generation.

Land use and buildings: Singapore ranks above average in land use and buildings, driven by full marks for almost all of the land use and eco-buildings policies evaluated in the Index. Land constraints in Singapore require careful urban planning, and the city has robust policies in place to contain urban sprawl and to protect green spaces from the negative side effects of development. The tone was set early, with Singapore's first prime minister, Lee Kuan Yew, vowing that Singapore would not become a "grey city". Presently Singapore has 66 square metres of green space per person, well above the Index average of 39 square metres, and the highest amount among cities with a small population in the Index (under 5 million people). Singapore's environmental building standards are

also among the best in the Index, with policies in place for eco-efficiency in new buildings, green standards for public buildings, and incentives to motivate households and businesses to conserve energy.

Green initiatives: The government wants 80% of all buildings to meet its minimum "Green Mark Certified" energy efficiency standards by 2030. The standards are mandatory for new buildings, and the city has a cash incentive scheme to encourage the owners of existing buildings to adopt them. The government also aims to increase park space in the city from 3,300 hectares currently to 4,200 hectares by 2020. It is also adding "eco-links" between parks so wildlife can move freely from park to park. In 2007 Singapore had 100 km of such connections, and it aims to raise this figure to 360 km by 2020.

Transport: Singapore is above average in the transport category, boosted by one of the longest superior public transport networks in the Index (defined as transport that moves large numbers of passengers quickly in dedicated lanes, such as metro, bus rapid transit or trams), and robust urban mass transport policies. The city's superior network, at 0.21 km per square kilometre, is above the 22-city average of 0.17 km per square kilometre. The government has been investing in mass transport improvements since the metro opened in 1987, realising that limited land area — 12% of which is taken up by roads — could not sustain big increases in traffic. The government supports its network with a comprehensive mass transport policy, a fully integrated pricing system and emissions-reduction plans. The city's congestion reduction policies are also a strong complement to its management of mass transport. For example,

road-pricing has been in place since 1975, and traffic is monitored so prices can be altered depending on volumes. An "Intelligent transport system" monitors the roads in real time so authorities can divert traffic away from accidents and breakdowns.

Green initiatives: By 2020 the government wants 70% of trips taken during morning peak hours to be on public transport, up from 59% in 2008. To achieve this goal it plans to double the rail network and develop more seamless connections between bus and rail services. This will include running more frequent and direct feeder bus services so that commuters can reach transfer hubs and metro stations from their homes more quickly. Real-time travel information will also be supplied online and to mobile phones to help commuters plan their journeys. Singapore also has a vehicle quota system that controls the number of vehicles in the city. Between 1990 and 2008 the vehicle stock was allowed to grow by 3% a year, but growth has since been capped at 1.9% a year. Within the quota system, more licences are available for smaller, fuel-efficient cars. The government offers a 40% rebate on purchases of green vehicles, such as hybrid, electric and compressed natural gas cars.

Waste: Singapore ranks as the only city well above average in the waste category. The city generates 307 kg of waste per person per year, lower than the Index average of 380 kg, and the authorities collect and dispose of all of it. Singapore's waste disposal policies are also among the best in the Index. The city burns some organic waste at temperatures of more than 1,000°C, which removes acidic gases and dioxins, and these plants in turn account for around 1% of Singapore's power generation. In addition,

Performance

	Singapore					Other cities				
	well below average	below average	average	above average	well above average	well below average	below average	average	above average	well above average
Energy and CO ₂	●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Land use and buildings	●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Transport	●●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Waste	●●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Water	●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Sanitation	●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Air quality	●●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Environmental governance	●●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●
Overall results	●●●●●	●●●●●	●●●●●	●●●●●	●	●●●●●	●●●●●	●●●●●	●●●●●	●

The color of circles within the performance chart is based on the index results.

City Profile Example: Singapore



some of the ash created is then used in construction materials.

Green Initiatives: The government has set a target to recycle 65% of waste by 2020, up from 56% in 2008. Authorities distribute recycling bags or bins to households, and recycling bins have been placed in public areas. Singapore residents have responded well to the initiative, with household participation in recycling rising from 15% in 2001 to 63% in 2008.

Water: Singapore ranks well above average in the water category. The city's consumption per person is 309 litres per person per day – a figure that includes domestic and industrial usage – above the index average of 278 litres. However, Singapore's performance in the water category is bolstered by the second lowest leakage rate, at 5%, compared to the index average of 22%. The city imports 40% of its water from Malaysia, with the rest gathered through its wide catchment network, or through reclamation and desalination. The city hopes to become completely self-sufficient in water by 2061, when its long-term agreement with Malaysia runs out. As a result, it has some of the best policies in the Index for water conservation, and it also leads the Index for its policies on water quality.

Green Initiatives: Singapore has five world-renowned water-reclamation plants, called "NEWater" factories, which treat wastewater through micro-filtration, reverse osmosis and ultraviolet technology. These currently deliver one-fifth of Singapore's water supply. Singapore has a desalination plant that provides 10% of its water, with a second plant due to open in 2013. The government wants desalination to meet at least 30% of its water needs by 2060. But mindful that desalination is currently the most energy-intensive water source, it is also funding research into more efficient processes that use only half the energy. Regarding water efficiency, the government also aims to reduce residential water consumption by promoting water-efficient appliances and through public awareness campaigns in the media and in schools. As part of the city's "Water Efficient Homes" programme, authorities have given households "do-it-yourself" water efficiency kits, which include trimbles to fit on taps and showers to limit leakage, and water-saving bags for cisterns.

Sanitation: Singapore is above average in the sanitation category. All of its residents have access to sanitation and all of the wastewater collected is treated. The government laid the groundwork for this first-class system in the 1960s, when it began an intensive sewerage

development programme to meet the demands of industrialization and an expansion in modern housing. The current system has separate networks for used water and rainwater, which helps to ensure high standards for water collected in reservoirs. Singapore also has strong sanitation policies, achieving full marks for environmentally sustainable sanitation standards and for wastewater treatment and monitoring, among others.

Green Initiatives: Over the last decade Singapore has also built a so-called "deep tunnel" sewage system, which is set to meet the city's wastewater needs far into the future. The tunnels, which are sloped to conserve energy, channel wastewater to the Changi Water Reclamation Plant. The plant is capable of treating 800,000 cubic metres of wastewater per day to international standards. After it is treated, the water is discharged into the sea or sent to a NEWater factory to be purified further.

Air quality: Singapore ranks above average in the air quality category, with some of the lowest levels of nitrogen dioxide and sulphur dioxide emissions among the 22 cities. Its daily levels of suspended particulate matter are also much lower than average. Singapore achieves its clean air primarily through stringent controls on industry and by carefully managing the number of

vehicles in the city. The city also performs well in the Index for its comprehensive air quality policies. For example, air quality is monitored at 11 stations scattered around Singapore in residential, commercial, industrial and roadside areas.

Green Initiatives: Singapore will apply stricter Euro IV emissions standards for all taxis by 2014 and all buses by 2020. The city is also running trials on emission-reducing "diesel particulate filters" for diesel-powered vehicles, as an initial step before planning to introduce them more widely. Regarding industrial emissions, the city mandates that industries conduct self-monitoring on air pollutants. This is supported by regular checks from the government and backed by the ability to fine offenders.

Environmental governance: Singapore ranks above average for environmental governance. The city regularly monitors all aspects of its environmental performance, publishes the results and involves citizens in environmental decisions. Singapore has had a Ministry for Environment and Water Resources since 1972, and together with two statutory boards — the National Environment Agency and the PUB, the national water agency — the ministry is charged with ensuring a clean and hygienic living environment. It sets targets in a broad range of areas and the government has a good record of meeting them. Policies are usually implemented in a highly competent manner. The government informs the public about environmental issues through schools and media campaigns.

Green Initiatives: The city established the Inter-Ministerial Committee on Sustainable Development in January 2008, a cross-functional initia-



tive to create Singapore's national strategy on sustainable development. Its members include ministers of finance, environment and water resources, transport, and trade and industry. The committee held hundreds of meetings with the business community and members of the public. It also recommended numerous initiatives in four strategic areas: improving resource efficiency; enhancing the physical environment through controlling pollution, increasing green

spaces and cleaning major water sources; encouraging residents to adopt a more environmentally responsible lifestyle; and developing technologies to help balance growth with sustainability. The plan includes proposals to improve environmental education in schools, fund partnerships with environmental NGOs, and a pledge to implement ideas from the public and business community to improve environmental sustainability.

Quantitative indicators: Singapore

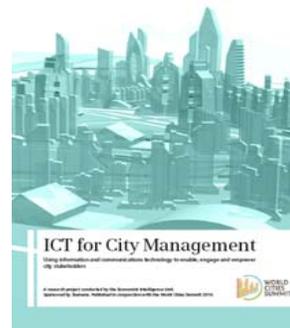
		Average	Singapore*	Year**	Source
Energy and CO ₂	CO ₂ emissions per person (tonnes/person)	4.6	7.4	2008	National Environment Agency
	Energy consumption per US\$ GDP (MJ/US\$)	6.0	2.9	2008	National Environment Agency, Singapore Government Statistics
Land use and buildings	Population density (persons/km ²)	8,228.8	7,025.2	2009	Singapore Government Statistics
	Green spaces per person (m ² /person)	38.6	66.2	2009	Singapore National Parks data, Singapore Government Statistics
Transport	Superior public transport network, covering tram, light rail, subway and BRT (km/km ²)	0.17	0.21	2010	Land Transport Authority
Waste	Share of waste collected and adequately disposed (%)	82.8	100.0 ¹	2009	Ministry of Environment and Water Resources
	Waste generated per person (kg/person/year)	375.2	306.6 ¹	2009	Ministry of Environment and Water Resources
Water	Water consumption per person (litres per person per day)	277.6	308.5	2009	Key Environmental Statistics 2010
	Water system leakages (%)	22.2	4.6	2009	Key Environmental Statistics 2010
Sanitation	Population with access to sanitation (%)	70.1	100.0	2009	Ministry of Environment and Water Resources
	Share of wastewater treated (%)	59.9	100.0	2009	PUB Singapore
Air quality	Daily nitrogen dioxide levels (ug/m ³)	46.7	22.0	2009	Key Environmental Statistics 2010
	Daily sulphur dioxide levels (ug/m ³)	22.5	9.0	2009	Key Environmental Statistics 2010
	Daily suspended particulate matter levels (ug/m ³)	107.8	56.0	2008	Yearbook of Statistics Singapore

* All data apply to Singapore unless stated otherwise. ** Year data for indicators were used for the year of the indicator (range of 100 indicators), 1 (based on economic year) or closest

Latest perception study by Siemens focuses on the use of ICT to improve Economic Development



77% of businesses think **broadband network is important for city competitiveness**



77%

74% of citizens say they would **change their energy and water consumption** if more **information** is available to them

74%

71% of businesses think an **ICT-savvy workforce** is critical

71%



Andrew Tan
CEO, NEA
Director, CLC

"Just as ICT has reduced the world into a global village, the same effect is taking place within cities."

"We are pleased that ... Siemens ... (is focusing) ... on the role of ICT in helping cities overcome many of their challenges."

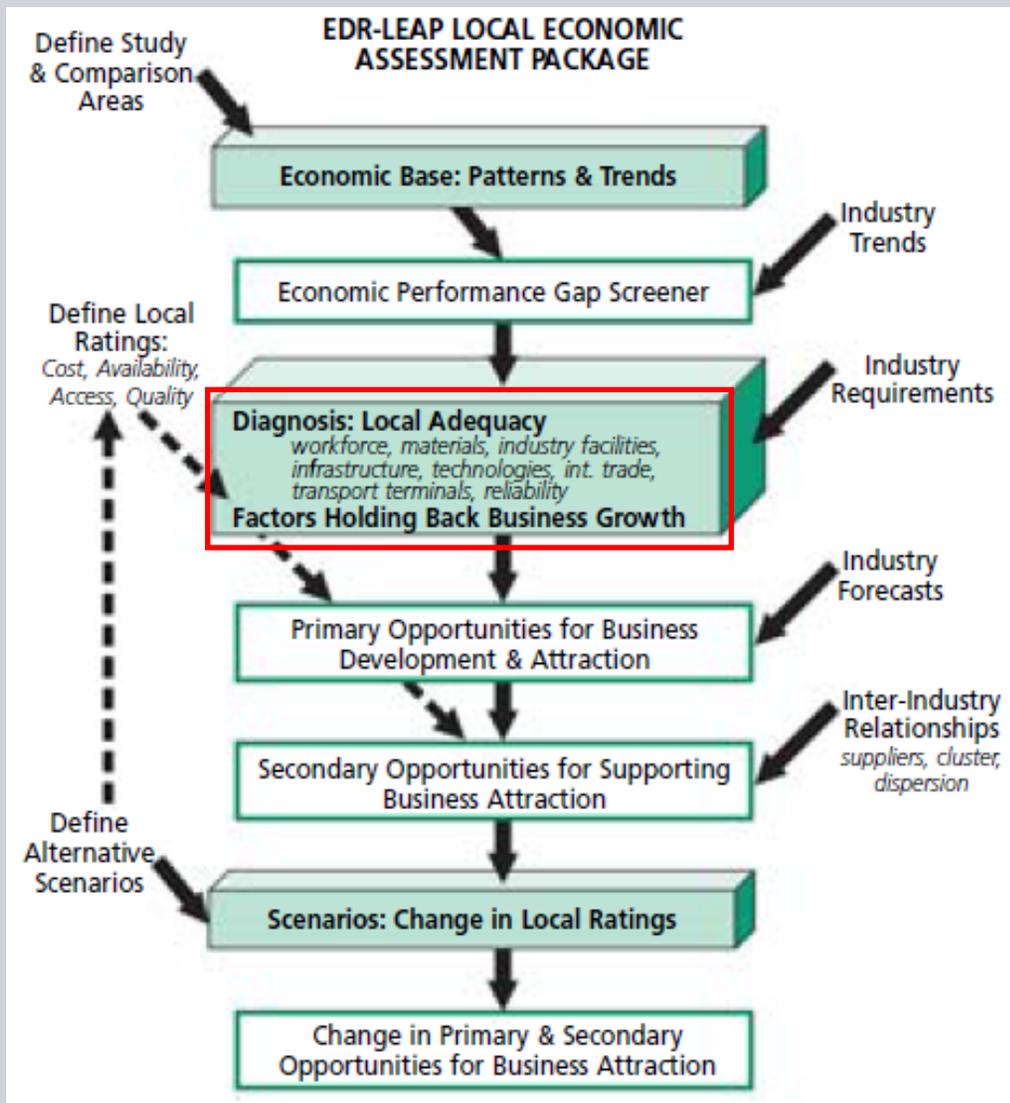


Prof. Ashish Lall
LKY School
of Public Policy

"... a sponsor of new technology must play two games: a game of value and a game of perceptions."

"ICT is fast becoming the 'fifth utility'..."

Sustainable Infrastructure Solutions = Economic Development



Sustainable Infrastructure Solutions Impact on Economic Development

- Lower Cost of Living
- Increased Accessibility/Transport
- Improved Quality of Life
- Expanded Workforce Capabilities
- Better Industry Facilities
- Increased ROIC for Infrastructure
- Innovative Technologies
- More Reliable Energy Delivery
- Creates Business Clusters

Agenda



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City of Peoria Strategic Goals

- **Decrease Operational Expenses** through programs that promote energy efficiency
- Drive **Economic Development** through Public Private Partnerships and spur growth through the EDIS programs (Higher Ed & Medical).
- **Conserve Water:** Includes the evaluation of Revenue Generation opportunities such as AMR/AMI solutions and expansion of Peoria's progressive water management programs
- **Develop Innovative Energy Strategies**
 - Alternative Energy Programs (Solar & Wind)
 - Water & Waste Water Efficiency Opportunities
 - Traffic Signals & Street Lights
 - Fleet Management
 - Intelligence Building Automation & Efficiencies
- **Community Education Programs**

City of Peoria

Topic	Specific Challenges, Problems & Needs of Peoria	Relevance
Traffic & Public Transport	Limited Public Transportation options (Buses & Commuter Rail)	
Energy & Environmental Care	Balancing Cost Reductions	
Water / Wastewater	Water & WRF Efficiency Opportunities	
Sustainable Programs	Coordination of Sustainability Programs across City Departments	
Economic Development	Competitive Environment in the Valley limits PPP's	
Metropolitan Security	Not a major issue right now	
Healthcare	Cost implications to meet needs of aging population	
Public Administration	Manage ability to deliver results with limited headcount & budget	
Financial Services	Limited city budget limits and impacts core services	
Education	Limited resources for Communication Programs for City Employees, Businesses & Citizens	
Lighting	Bulk Metering Rates & Utility Programs for Street Lights	
Sports Venues, Fairs & Event Sites	Irrigation strategies for Parks & Recreation facilities	
Building Technology	Opportunity for Optimization of Existing Systems	

None
 Low
 Moderate
 High
 Very high

Siemens answers to city specific challenges

Topic	Relevance	Dedicated Solutions
Traffic & Public Transport	Low	
Energy & Environmental Care	Low	✓
Water / Wastewater	Low	✓
Sustainable Programs	Moderate	✓
Economic Development	High	✓
Metropolitan Security	None	✓
Healthcare	Low	
Public Administration	Low	
Financial Services	Moderate	✓
Education	Moderate	✓
Lighting	Moderate	
Sports Venues, Fairs & Event Sites	None	
Building Technology	Very high	✓

Integrated Approach

None
 Low
 Moderate
 High
 Very high

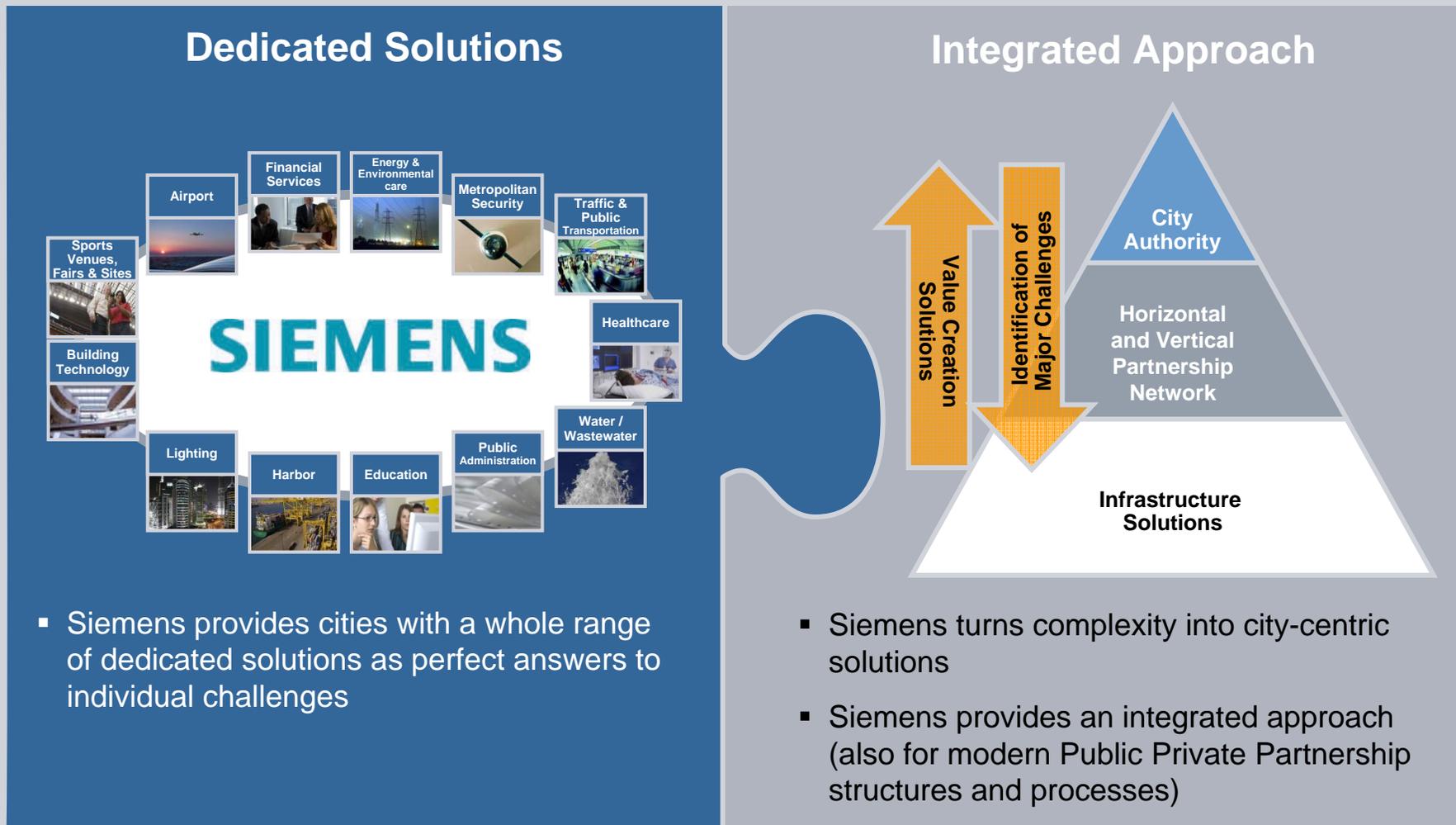
Areas of Near-Term Focus for Peoria

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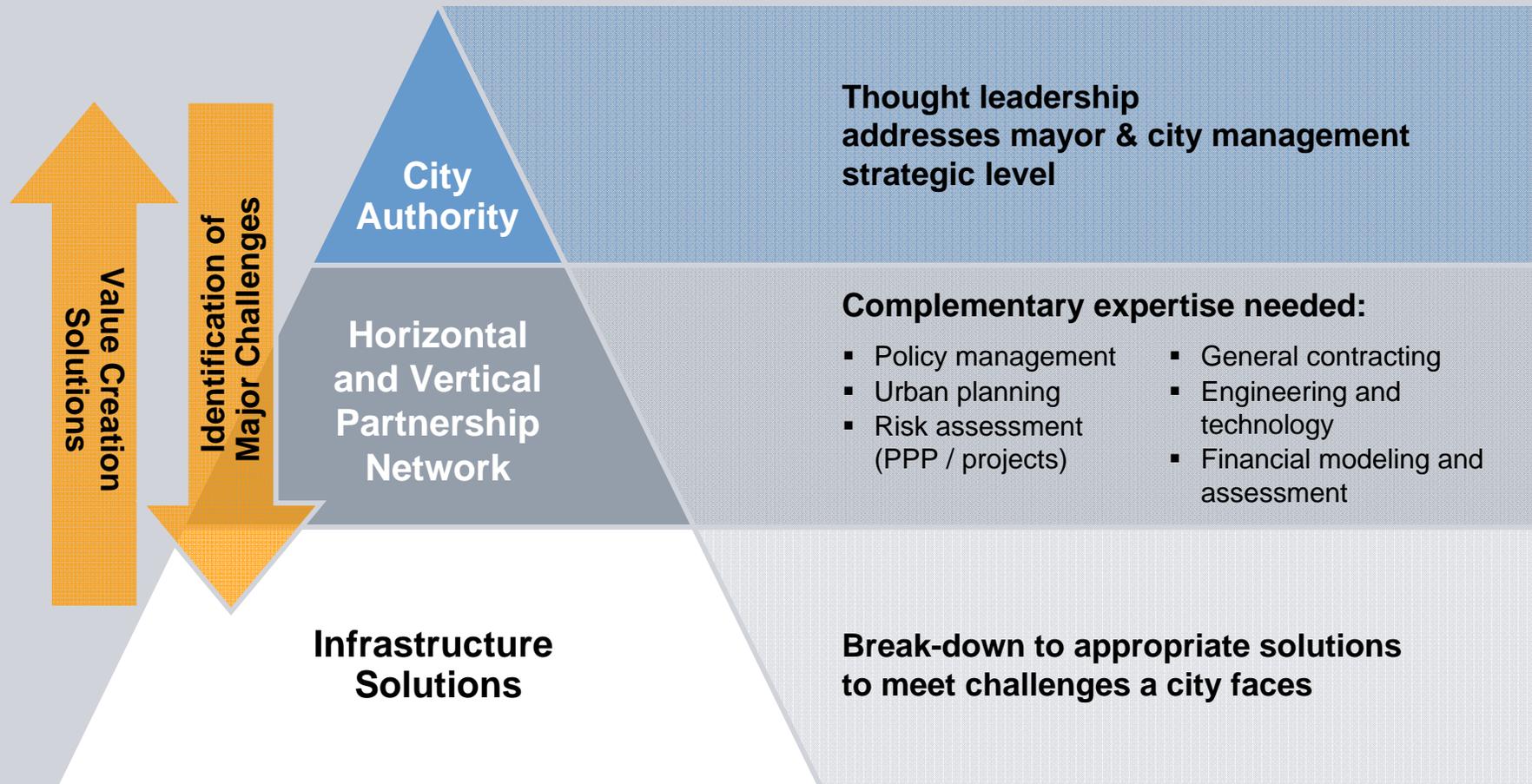
Siemens offerings are bilateral



- Siemens provides cities with a whole range of dedicated solutions as perfect answers to individual challenges

- Siemens turns complexity into city-centric solutions
- Siemens provides an integrated approach (also for modern Public Private Partnership structures and processes)

Integrated approach to meet cities' demands



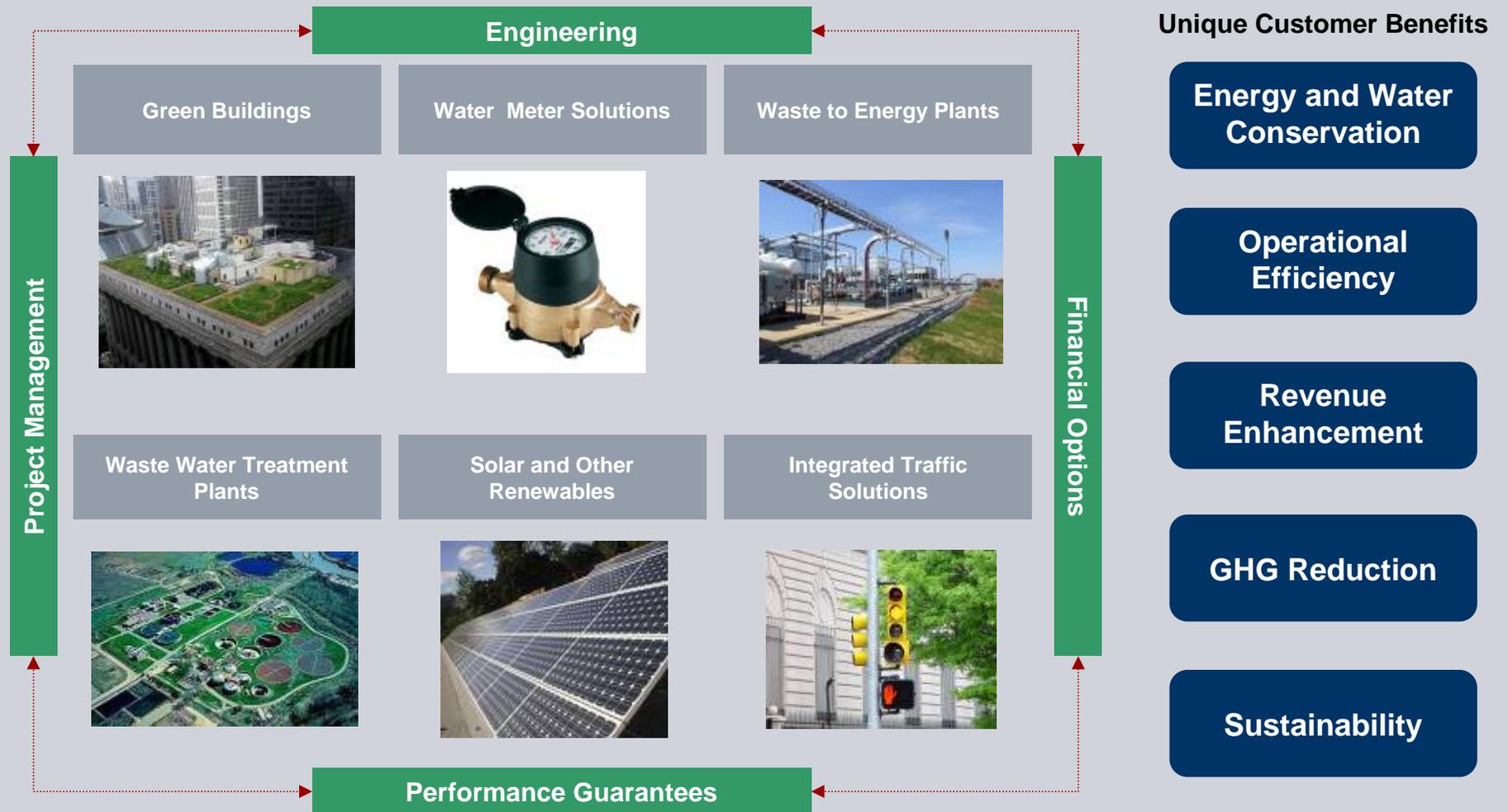
▶ **Pragmatism drives involvement of partners of the partnership network**

Our unique environmental portfolio makes Siemens the credible partner for sustainable urban development



Energy and Environmental Care 	Metropolitan Security 	Traffic & Public Transportation 	Public administration 
Water / Wastewater 	Healthcare 	Sports Venues, Fairs & Sites 	Airport / Harbor 
Financial Services 	Lighting 	Building technology 	Education 

Holistic Approach to City-Centric Solutions



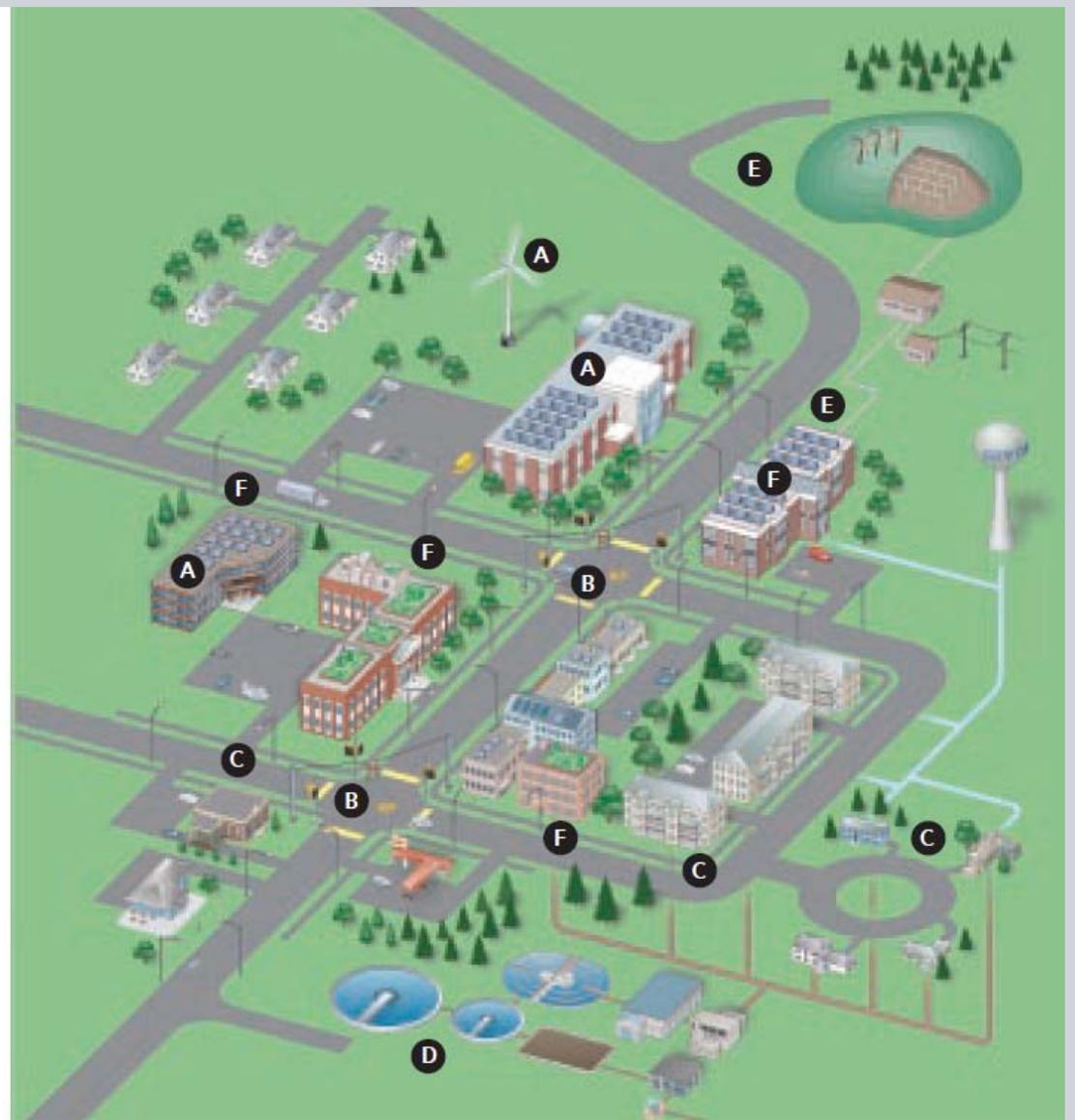
Energy & Sustainable Solutions for Local Government

Helping Our Nation's Communities Make a Difference

From energy efficiency and renewable energy solutions to green buildings, Siemens can help make your community more sustainable and reduce greenhouse gas emissions.

- A** Alternative/Renewable Energy
- B** Traffic Lights/Street Lighting Retrofits
- C** Water Meter Retrofits/Replacements
- D** Waste Water Treatment Plants
- E** Landfill Gas to Energy
- F** Green Buildings

For additional information visit us at:
www.usa.siemens.com/buildingtechnologies



Education & Outreach: The Key to Program Success



Sustainable Cities

Sustainable Development for Urban Infrastructures



City of the Future

A futuristic and interactive exhibition and solutions center for modern, efficient and innovative city management

In the coming decades, demographic change, urbanization and climate change will shape the world. These "Megatrends" present numerous urban problems to many cities around the world.

The approach to these challenges is through technological progress and innovations – and Siemens already has the answers. Our innovative technological solutions portfolio spanning the fields of energy, healthcare, transportation, water and building technologies, right through to City Management solutions from Siemens IT Solutions and Services, are well-poised to help tackle the problems faced by city decision makers.

The CoC for City Management
The initiative to establish the global Center of Competence (CoC) for City Management in Singapore is the direct result of a desire at Siemens to leverage its portfolio through a close co-operation with the local city management bodies. Leveraging on Singapore's openness to innovations and new technologies, CoC is able to partner local innovative resources to develop cutting-edge and world-class solutions that will benefit our customers around the world.

The CoC for City Management is the first outside of Europe for Siemens IT Solutions and Services and it is tasked to look into the needs of a city. The CoC's key role is to develop and implement solutions that enable city officials to plan for tomorrow today.

The CoC solutions offerings fall into three distinct areas:

- Smart solutions
- Safe solutions
- Mobile solutions

The City of the Future Exhibition and Solutions Center
To allow customers and partners to take a closer look at the CoC solutions and Siemens offerings: from the fields of energy, healthcare, transportation, water and building technologies benefiting a city, a 1,488 square-feet exhibition and solutions center was set up in Singapore in March 2009.

Led by the CoC for City Management working closely with Siemens' vertical business divisions, the facility located in the Siemens Center uses interactive applications and digital media to showcase and demonstrate Siemens' portfolio of innovations that enable city authorities to better plan and manage their city for a sustainable future.

Siemens IT Solutions and Services



Siemens We Can Change the World Challenge

As citizens and future stewards of our planet, today's students are in a unique position to become active agents of environmental change. The good news is that many of them are very interested in learning about and taking responsibility for their environment and their future.

The Siemens We Can Change the World Challenge gives students the opportunity, tools and inspiration to become those agents of change. The Siemens Foundation, Discovery Education and the National Science Teachers Association have partnered on the Siemens We Can Change the World Challenge to educate, empower and engage students, teachers and communities to become "Agents of Change" in improving their communities nationwide.

Beginning in fall 2008 through March 2009, middle school student teams from across the country were challenged to create sustainable, reproducible environmental improvements in their local communities. More than 2,000 students participated in the inaugural year of the Siemens We Can Change the World Challenge. A panel of environmental experts and science educators then reviewed and selected the top projects.

Registration for the Siemens We Can Change the World Challenge will re-launch in fall 2009 for grades K through 8. The initiative will expand to high schools in 2010.



Siemens We Can Change the World Challenge

www.siemens-foundation.org



Examples of Siemens solutions Green Cities

City of Houston, TX



City-Wide Sustainability Program

- **LED Traffic Signal Retrofit**
- Clinton Climate Initiative Program (4 Phases)
- Waste Water Treatment Plant Program
- Demand-Side Management Program (Lighting)
- Increased Revenue and Decreased Op Ex

City of Mesa, AZ



City-Wide Energy Study

- Scope of work: Building Retrofits, Irrigation Strategies for Parks, FOG Program at WWTP, Solar Programs, Smart Grid & AMR/AMI,
- Result: **Energy Savings** of 20% per year for selected measures

LED City Lighting, Regensburg, Germany



A modern city needs high quality of lighting at low cost

- **Cut energy costs by 50% per year**
- Individually controllable and homogeneous radiation
- Creates a warm white atmosphere
- Won 1st price of govt. Competition „Energy efficient street lighting“

Cleburne, TX



City-Wide Performance Contract

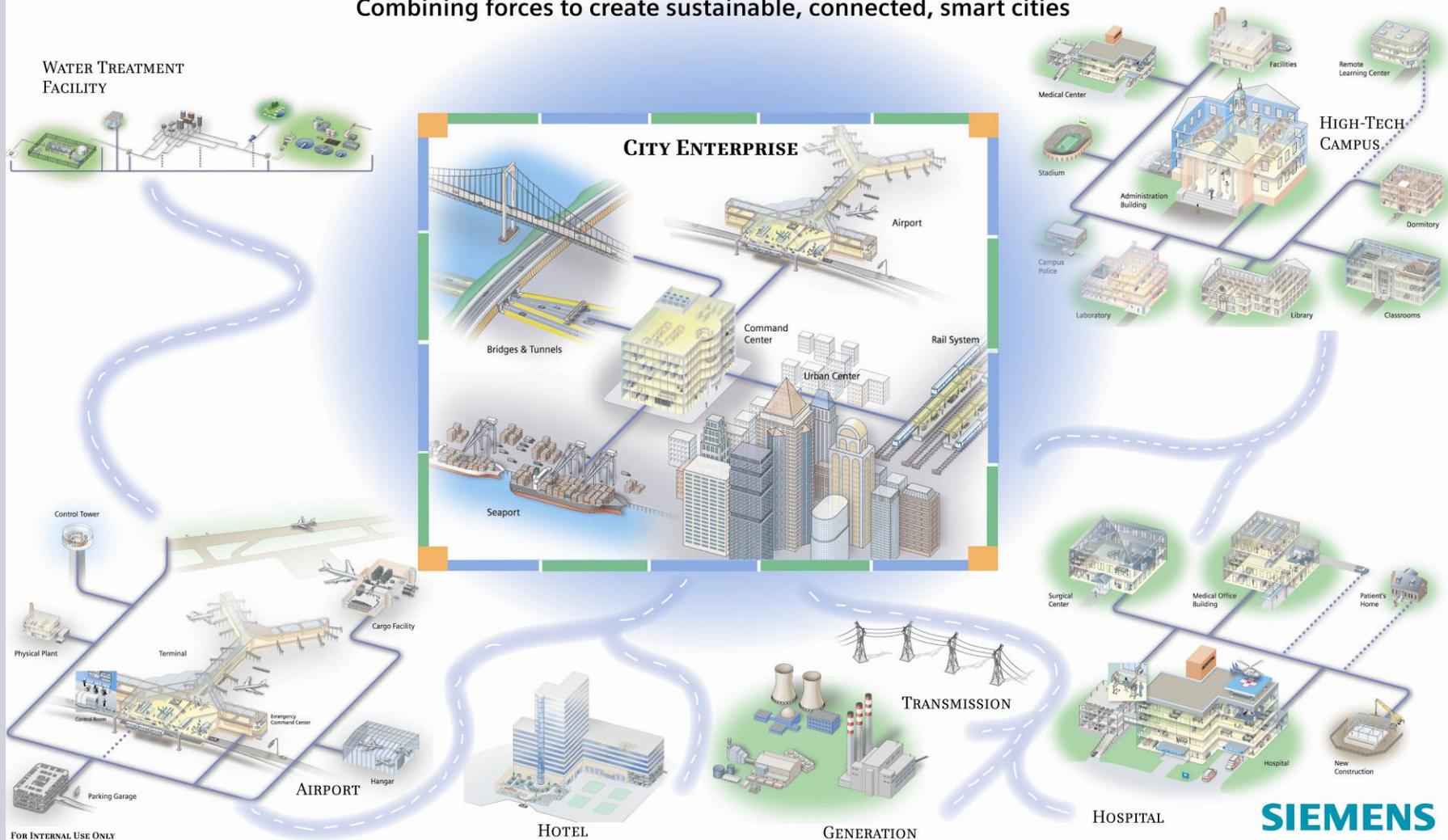
- Lighting, HVAC, Water Meter AMR and WWTP Project
- Savings of 2.6M kWh, 226 Cubic Feet of Gas, 561,000 gallons of water per year – 10 year guarantee
- \$550,000 of increased water revenue in first year. Annual savings of over \$260,000 per year of operational savings

► Sustainable urban infrastructure requires a macroscopic view

Solutions for Infrastructure and Smart Cities

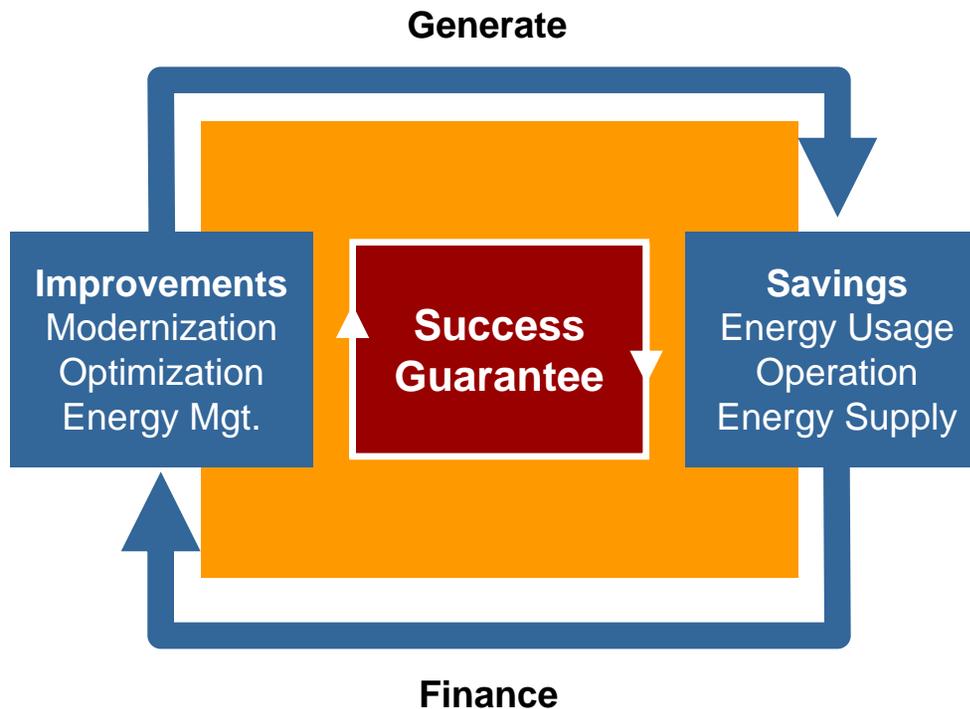
Collaboration and Innovation

Combining forces to create sustainable, connected, smart cities



FOR INTERNAL USE ONLY

Siemens Guaranteed Performance Solutions An Unbeatable Formula



Local Government Solution
Helping communities become Vibrant, Growing and Green

Financing Options for Local Governments
Reference Guide

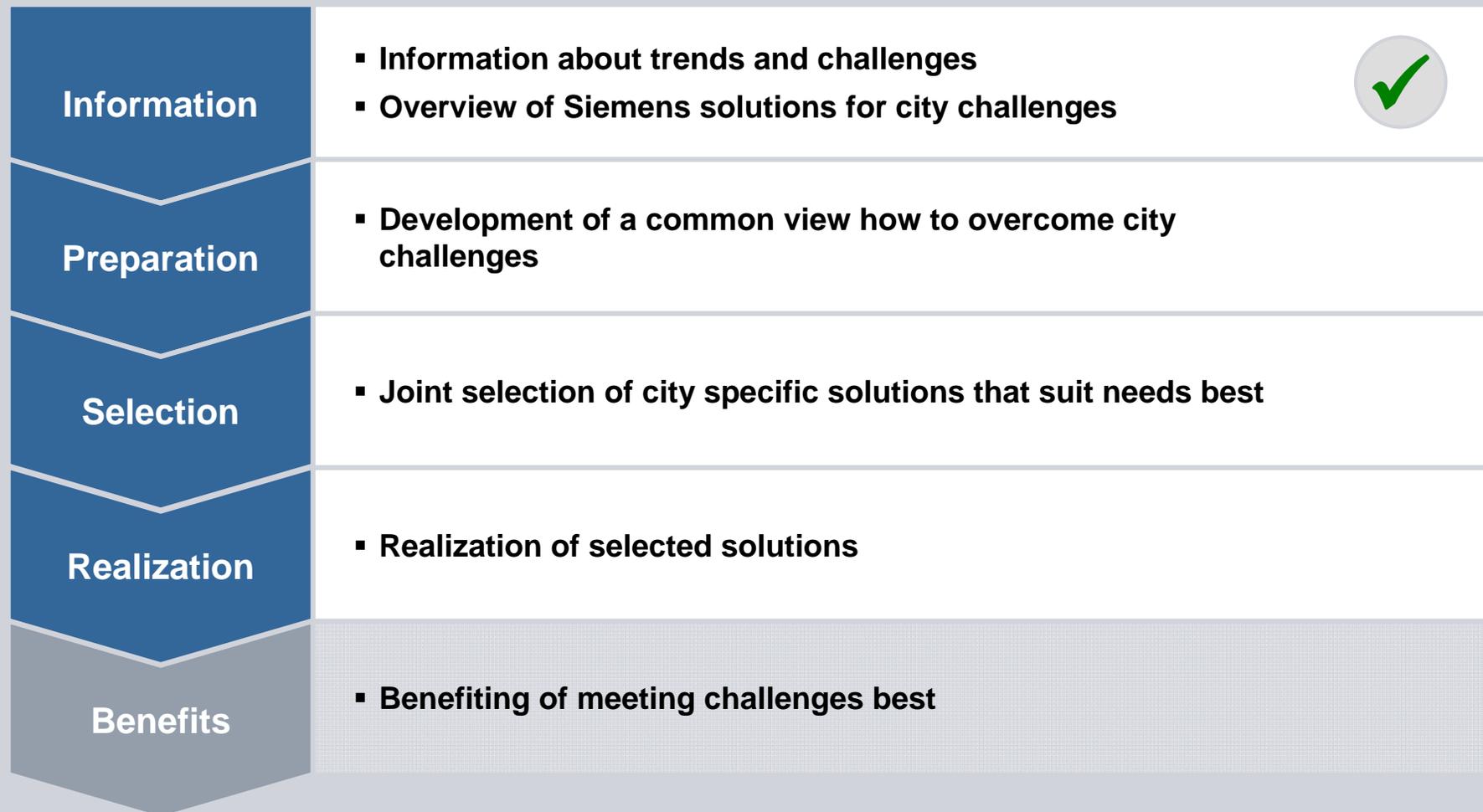
April 2011

Agenda



- Trends & Implications for Sustainable Cities
- What makes a City Sustainable?
- City of Peoria Goals & Objectives
- Sustainable Infrastructure Programs
- The way forward

There are 3 steps left to reach benefits



Sustainable Cities Links

Siemens Sustainable Cities:

<http://www.siemens.com/entry/cc/en/urbanization.htm>

Siemens Answers:

<http://www.usa.siemens.com/en/government/index-v3.htm#toc1>

Siemens Pictures of the Future:

<http://www.siemens.com/innovation/en/publications/index.htm>

Siemens Industry Journal:

<http://www.siemens.com/industryjournal/en/>

Economic Development Research Group

<http://www.edrgroup.com/>

International Economic Development Council

http://www.iedconline.org/index.php?p=Guide_Smart_Growth

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to respond to a complex
21st-century environment.**

**This is where a strategic partner
like Siemens with over 150 years'
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in the world, can make a
valuable difference.**

