



Forecasting Land Use Issues and Trends



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Demographic Changes

Key Points:

1. *Racial and Ethnic Diversity*
2. *Large Aging Population*
3. *Generation Y and the Creative Class*
4. *Shifting Households*
5. *The 5th Migration and Rightsizing*
6. *Anticipated Impacts*



Picture by Ildar Sagdejev



Demographic Changes

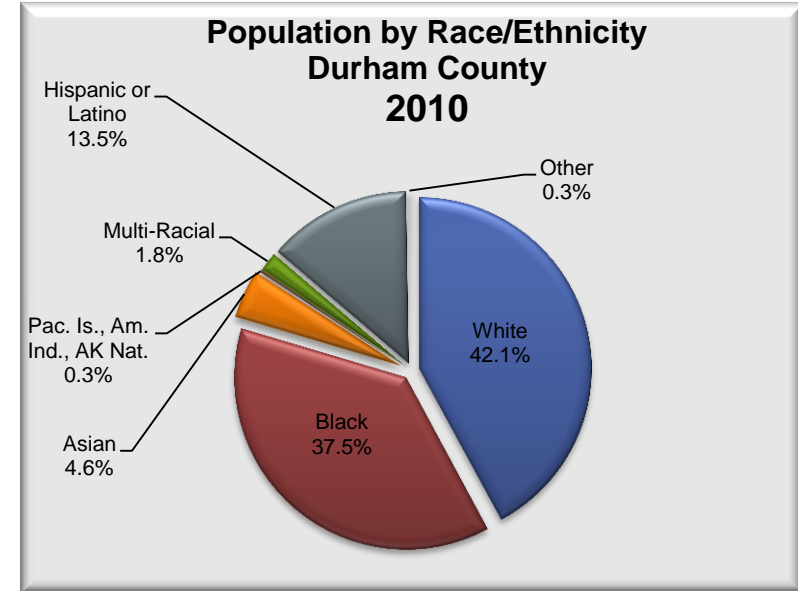
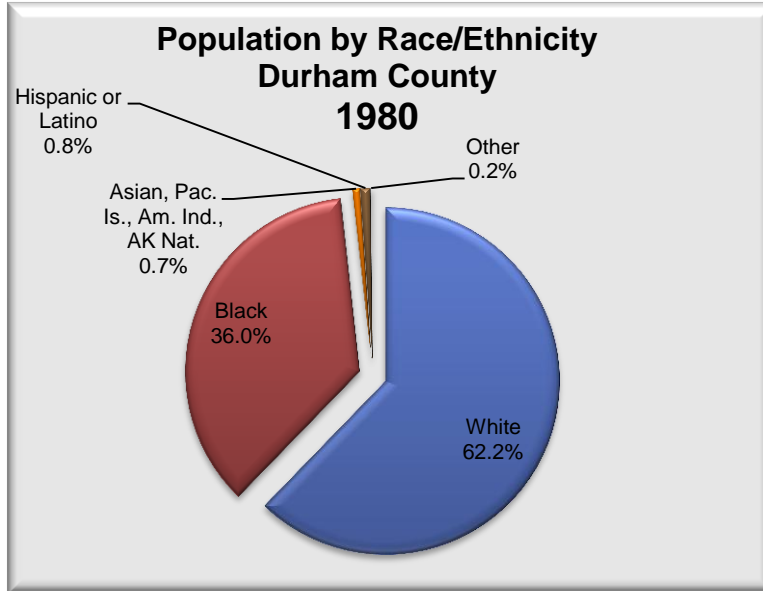
Increasing Racial and Ethnic Diversity

- By 2050 the United States is expected to have no clear racial or ethnic majority.
- Minorities typically have lower rates of homeownership, higher rates of multigenerational households, and are more likely to depend on public transit.
- Durham is already a “minority majority”



Demographic Changes

Increasing Racial and Ethnic Diversity



Source: US Census Bureau, Census 1980, 2010.



Demographic Changes

Large Aging Population

- The 65+ population is the fastest growing age group in the nation.
- The senior population in Durham has increased 21% over the past decade.
- Affluent empty nesters tend to migrate to walkable and transit oriented urban areas.
- For some, the economic downturn has led to delayed retirement, aging in place, or multigenerational living.



Demographic Changes

+ *Entrance of Gen Y and Creative Class*

- Gen Y consists of nearly 80 million 15 - 32 year olds, larger than the Baby Boomer generation.
 - tend to be mobile and career focused, technologically savvy, and environmentally aware with a global world view
- “Creative Class” are engaged in knowledge-based and innovative careers
 - Durham named top city in the nation for the creative class by *The Atlantic Cities* magazine, July 2012



Demographic Changes

Shifting Households and Family Structures

- Single-adult households are expected to become the majority household type by 2050.
- Households without children are expected to make up 40% of all households by 2050.
- Family households in Durham have decreased from 64% to 58%; non-family households have increased from 36% to 42% since 1990.



Demographic Changes

The 5th Migration

- The 5th Migration explains the renewed interest in the downtown areas of cities as seen by population increases and gentrification of many city centers and 1st ring suburbs across the nation.
 - High density multi-use areas are more energy efficient per capita than suburban living and serve to reduce congestion, traffic, and greenhouse gases from cars.



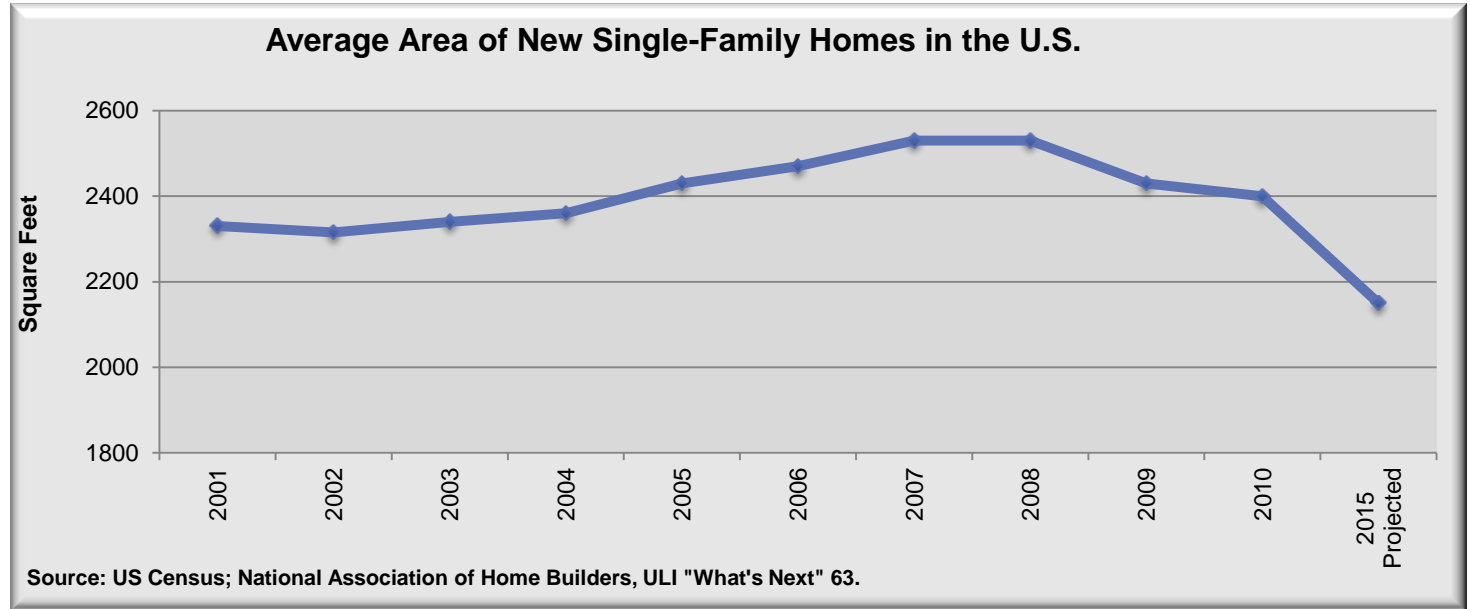
Demographic Changes

- ✚ ***Rightsizing** refers to the willingness or even preference to reduce space to increase efficiency and accessibility.**
 - In the bad economy, residents and businesses have shown a preference for smaller, more efficient living and work spaces.
- ✚ ****term used by Urban Land Institute, “What’s Next: Real Estate in the New Economy” 2011.***



Demographic Changes

- ✚ ***“Rightsizing” example – builders are responding to homeowner demand for smaller more efficient homes.***





Demographic Changes

Anticipated Impacts

- Migration toward the city center leads to increased demand for work and residential space within the city and 1st ring suburbs.
- High density smaller living and work places located within easy access to public transit are preferred.



Old Bull Building on Pettigrew Street
Source: Triangle Business Journal, 2011.



Demographic Changes

Anticipated Impacts (con't)

- Higher minority population creates more demand for affordable rental housing with access to public transit.
- Aging seniors with mobility issues increase demand for public transit and transit-oriented housing units.
- Gen Y, Creative Class members, more single-adult households increase demand for smaller, high density urban housing with easy access to work and social activities



Transportation and Mobility

Trends in...

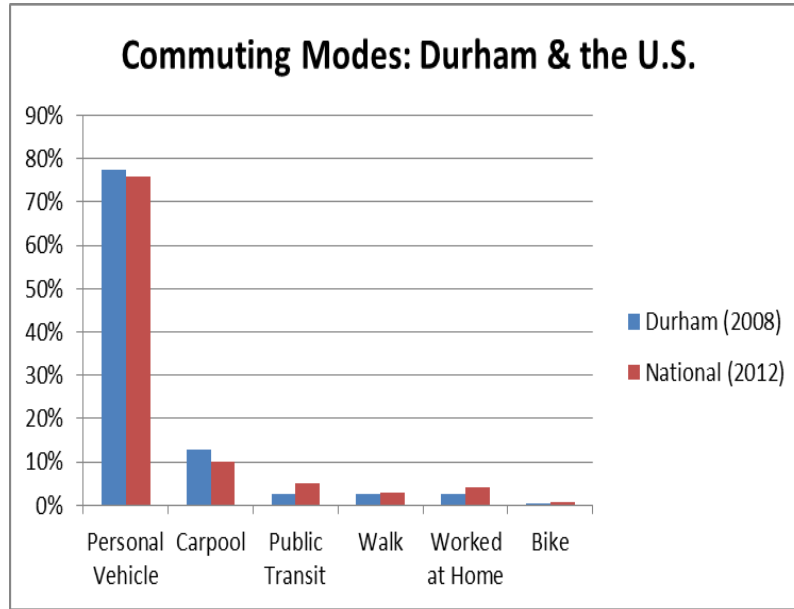
- 1. Transportation Mode Split***
- 2. Public Transit Usage***
- 3. Commuting Time and Costs***
- 4. Technological Innovations***

Overall Forecasts of Transportation Trends



Transportation and Mobility

✚ *Transportation Mode Split*



Durham is fairly similar to the nation as a whole

However, different groups use transportation somewhat differently:

- Ethnic/Racial Group
- Generational
- Gender

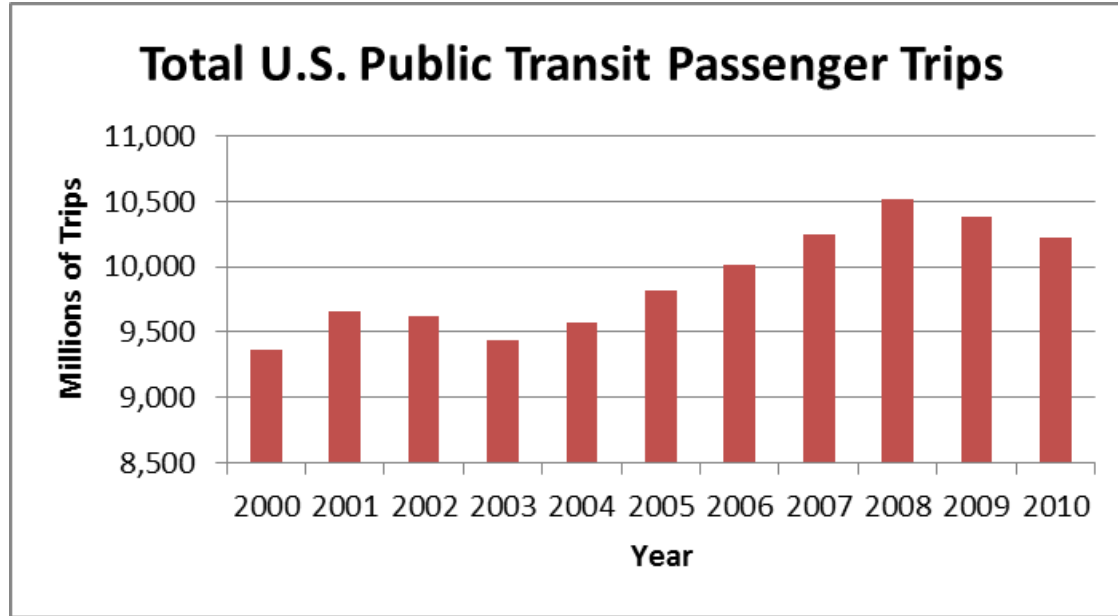
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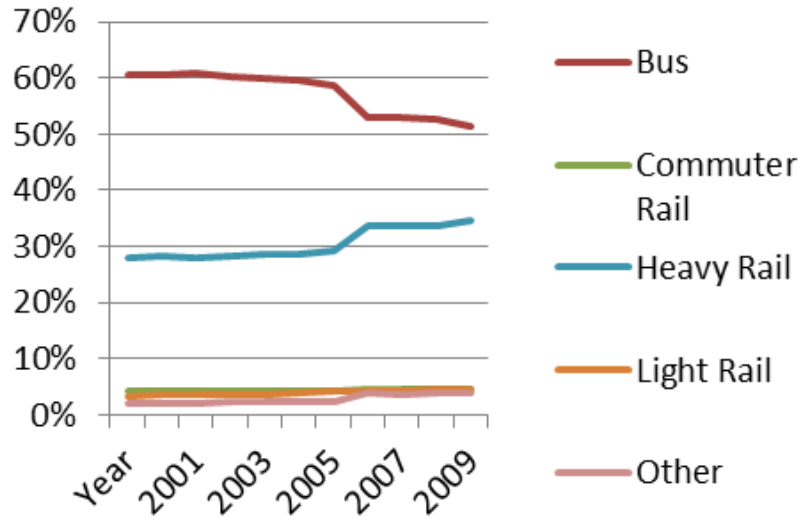
Transportation and Mobility





Transportation and Mobility

**Public Transit Passenger Trips
by Mode (Percent of Trips)**



Increase in rail ridership seen at local level:

- Amtrak (serving Durham) increased ridership by 16% in 2012

However, bus service is also increasing in Durham

- DATA ridership increased 15% in 2011



Transportation and Mobility

Average Commute Time and Congestion Costs

- *Americans spent an average of 25 minutes commuting to work in 2010, slight decrease from 2000*
- *Raleigh-Durham ranks 42nd in delay per auto commuter*
 - *average resident spends 25 hours annually in congestion*
- *Congestion in Raleigh-Durham costs estimated \$537 million*



Transportation and Mobility

- ✚ ***Technological Innovations in Transportation***
 - **Automation of cars**
 - *Legalized in Nevada, legislation pending elsewhere*
 - *Potential benefits (reduced human error, increased mobility) and drawbacks (increased miles driven, CO2 emissions)*
 - **Increase in high-tech toll roads (congestion pricing)**
 - *Washington, D.C. recently instituted*
 - *Potential benefits (more adaptive, encourage public transit) and drawbacks (issues of fairness)*



Transportation and Mobility

Forecasting Transportation Trends

1. *Use of single-occupancy vehicles will continue to be the dominant form of transportation*
2. *Public transit, cycling, and other alternatives will gain market share (due to changes in land use patterns and personal preferences)*
3. *Socio-demographic changes will encourage non-car use*
4. *Effect of future technology (automated cars, toll roads) is debatable.*



Energy and Infrastructure

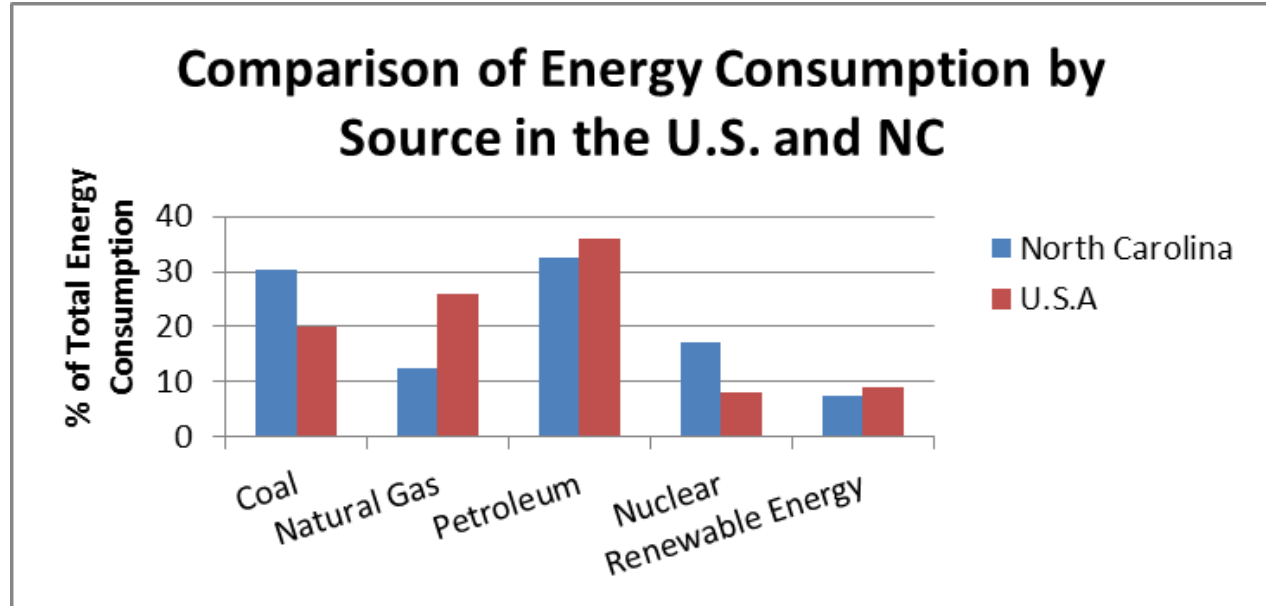
Trends in...

1. *Statewide Energy Portfolio*
2. *Electricity Prices*
3. *Green Building and Retrofits*
4. *Small-Scale Renewables*
5. *Forecasts for Energy Trends*



Energy and Infrastructure

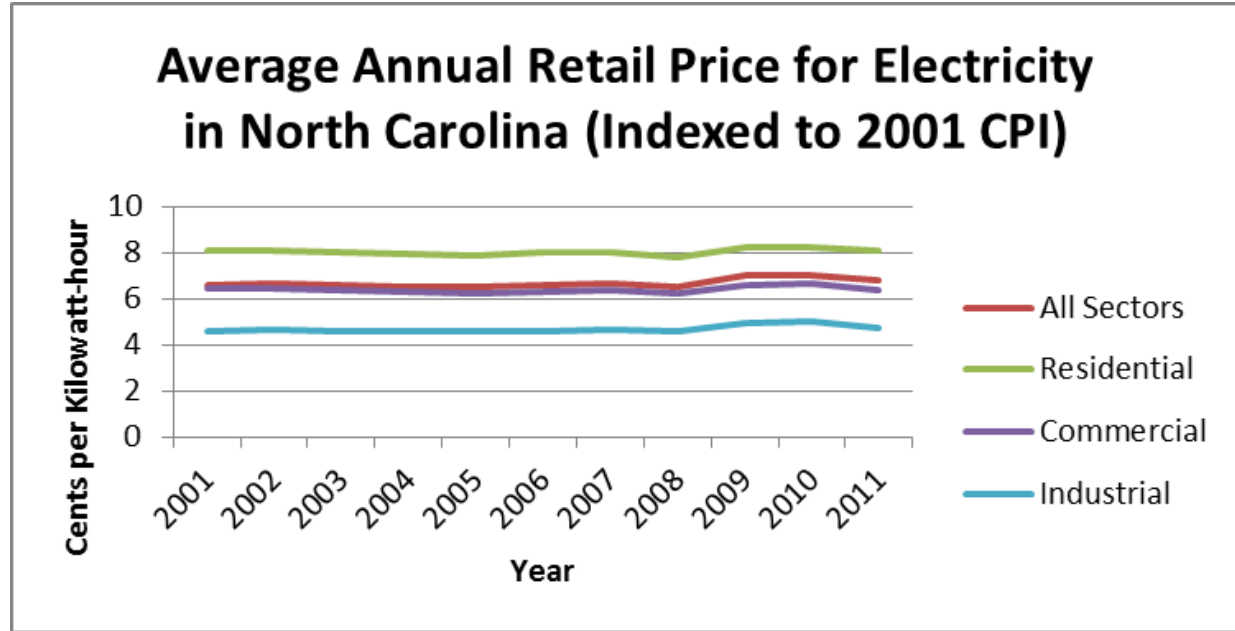
✚ *Current Energy Portfolio*





Energy and Infrastructure

Price of Electricity in North Carolina





Energy and Infrastructure

- Green Building and Energy-Efficient Retrofits***
 - Buildings account for ~41% of energy used in U.S.*
 - Green building and retrofits can greatly improve energy savings, LEED buildings found to decrease energy usage by 18-39%*
 - Encourage home builders to partner with NC HealthyBuilt Homes Certification Program*



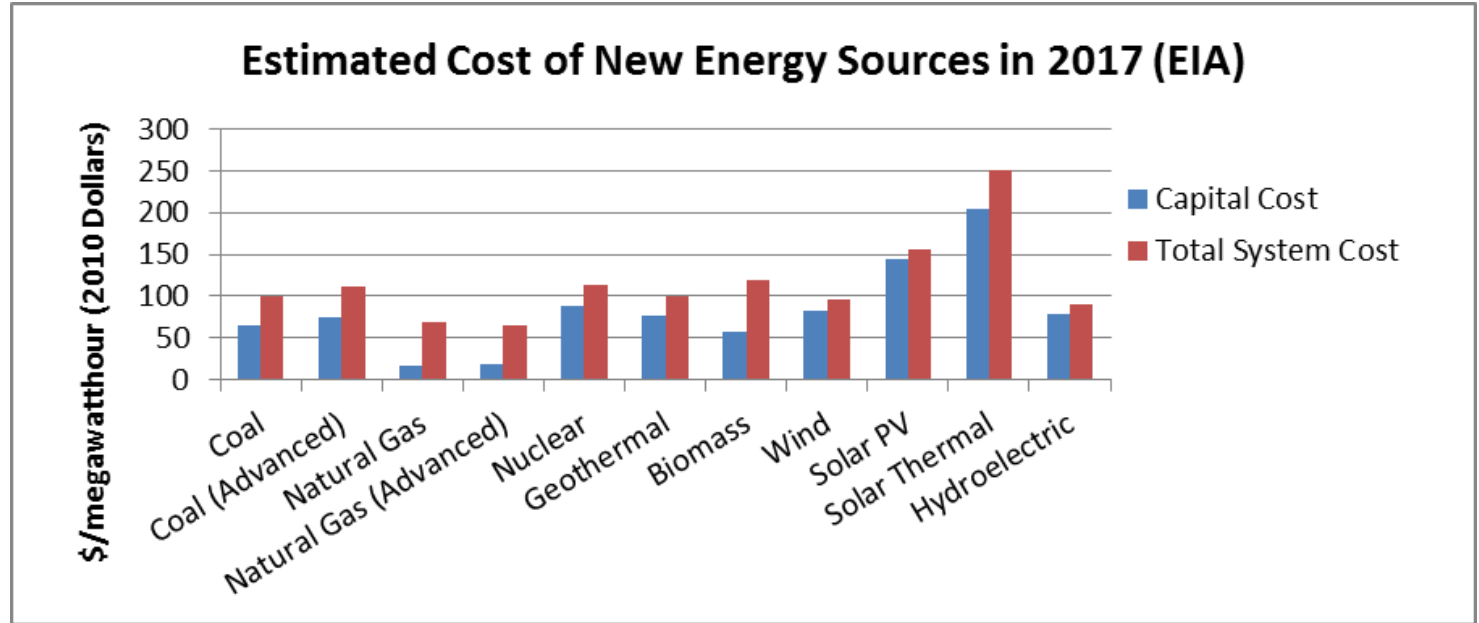
Energy and Infrastructure

Small-Scale Renewable Energy

- *A few technologies are particularly appropriate to Durham:*
 - Photovoltaics
 - Geothermal
 - Small wind turbines
 - Solar water heaters
- *Rogers Alley geothermal heat pump was first private, commercial device in state*

Energy and Infrastructure

✚ *Small-Scale Renewable Energy – Prices Dropping*



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Energy and Infrastructure

Three suggestions for promoting small-scale renewables:

- 1. Publicize federal, state, local subsidies*
- 2. Promote neighborhood collective purchase plans*
- 3. Streamline the permitting process for PV and solar thermal systems*



Energy and Infrastructure

Forecasting Energy Trends

- 1. Growing population will require increased electricity***
- 2. This demand can be at least partially met by renewable energies as they become more cost-competitive and feasible in small-settings***
- 3. Certain trends may slow growing energy needs...***
 - Green building and energy retrofits*
 - Aging population and shrinking family sizes may slow energy growth*



Advanced Computing and Communication Technologies

Trends in...

- 1. Telecommunications***
- 2. Smart Phone/Internet Usage***
- 3. Smart Cities***

Overall Forecasts of Communication Trends



Advanced Computing and Communication Technologies

Telecommunications

- *Advent of cheaper, higher quality technology*
- *Subsequent growth in employees working from home (41% growth in last decade)*



Advanced Computing and Communication Technologies

Trends in Smart Phone/Internet Usage

Huge proliferation of internet-connected devices

- 44% of Americans own a smartphone in 2012

Connectivity leading to more online transactions

- Online retail grew 40% between 2007 and 2012 (especially concentrated in certain sectors)

Online shopping has caused retailers to cut costs on physical infrastructure

Winners will be convenient, attractive centers; losers will be those located on fringes



Advanced Computing and Communication Technologies

Smart Cities

- *Harnessing information technology to **improve municipal efficiency, service distribution, and community involvement in government***
- **Examples of smart city technology include:**
 - Intelligent transportation systems (real-time data to improve traffic flow)
 - Integrated operations centers (Rio de Janeiro)



Advanced Computing and Communication Technologies

Forecasting Communication Tech Trends

1. *Continued growth of at-home workers combined with shrinking space per employee slows need for new office space*
2. *Online retail will decrease need for physical retail facilities and may concentrate businesses in nodes and downtown*
3. *The increase of internet-enabled devices will result in a rapid increase in data enabling implementation of more precise planning*

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Questions?



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