

FHWA Office of Real Estate Services
Research Results:
2006 Preferred Future Scenario for
Public Sector Real Estate

August, 2006

EXECUTIVE SUMMARY

Sponsored by the Federal Highway Administration, Office of Real Estate Services (HEPR), a one-and-a-half day Scenario Development Think Tank was held in March 2006 in order to develop a twenty-five year view of the future of public sector real estate. Think Tank participants included twenty-five federal and state agency real estate professionals, environmental and planning specialists as well as private sector professionals working in public sector real estate.

The Preferred Future Scenario Development Process

The scenario development process used is called the Preferred Future Scenario Development Process. This process seeks to anticipate probable and possible future scenarios and to focus them into preferred alternatives as well as to identify the critical strategic actions or issues that, if followed, will lead to the preferred future. The objective is to develop several plausible scenarios that describe how the world may develop given certain future events, trends and developments and to discover preferred strategic responses within these plausible futures. The process suggests that early identification of actions and strategies that shift your direction from the probable future to the preferred future is vital to successfully shaping the future.

Future Scenarios

Through the performance of several group exercises, Think Tank participants as a group defined, in terms of “predetermined elements” (events that will surely happen within the future time-frame) and “critical uncertainties” (events that are uncertain, but critical to the future of public sector real estate) the circumstances that would guide the development of the future scenarios. These circumstances are summarized in Exhibit ES-1.

Exhibit ES-1: Circumstances Guiding Scenario Development

Predetermined Elements

- 1) Greater diversity and aging of the U.S. population
- 2) Public sector funding will not be sufficient to meet transportation or other public project needs
- 3) Deteriorating and obsolete public infrastructure
- 4) More severe environmental events, leading to population migrations and increases in demand for public funding
- 5) Rapid technology advances

Critical Uncertainties:

- 1) Two national disasters occur – terrorist attack and earthquake
- 2) Two national disasters occur – pandemic flu and severe sea level rise
- 3) Severe limitations placed (through legislative actions) on the definition of “public use” on which eminent domain can be used
- 4) No significant change (through legislative action) in the definition of “public use” on which eminent domain can be used
- 5) Legislative and policy changes occur that encourage Public-Private Partnerships
- 6) Legislative and policy changes occur that discourage Public-Private Partnerships
- 7) Chinese and Indian markets significantly open to U.S. goods and services
- 8) Chinese and Indian markets significantly limited to U.S. goods and services

Then, re-grouped into four working groups, participants spent two hours developing a timeline-based scenario noting both external trends and developments, and responses and trends within public sector real estate with the goal of developing a plausible future to the year 2030.

Strategic Issues for FHWA Office of Real Estate Services

Assuming that their scenario was the actual future, the working groups identified what would be the preferred responses in the public sector real estate community in terms of policies, practices, tools and technologies. Each team developed a list of ideas, but more importantly, the teams, though working under four different scenarios, ended up with a number of overlapping ideas of what the preferred responses in the public sector real estate community would be. These overlapping policies, practices, tools and technologies were called common ground elements.

Finally, Think Tank participants studied the list of common ground elements and asked, “What should HEPR do, learn, or prepare for in the coming years?” They looked specifically at policies, practices, tools and technologies they would recommend HEPR pursue in order to achieve some of the elements that were identified as part of the preferred future. The strategic issues for HEPR, identified by the group included:

- Partnerships, both public-private, and public-public:
 - Formalize partnership and the partnering process
 - Creative regulations
 - Coordinate with other agencies, other levels of government, academics and the private sector
- Develop a training and certification template that can be used by other agencies and consultants.
- Peak oil and global warming: Develop a scenario regarding what, for example, a \$10 per gallon gasoline price or one foot rise in sea level would mean for public sector real estate.
- Emergency preparedness: Identify issues to be addressed, proactively, in future emergencies and create plans for doing so. Identify where responsibilities lie.
- Evaluate Information Technology and make recommendations. Encourage AASHTO to take the lead in developing best practices and computer tools, aiming for greater uniformity across the country.
- FHWA HEPR should embody ideas of effective communication and process in all activities.
- As Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) statutory revisions are proposed, include the idea of forming an independent “Lead Agency” organization into the proposal.
- Encourage an on-going “Think Tank” or advisory group, to assist in making progress. Include a good mix of perspectives and participants, *e.g.* both public and private.
- Federal agencies should devote more resources, priority and emphasis to:
 - Program oversight
 - Outreach (for consistency)
 - Enforcement

1. INTRODUCTION

The FHWA Office of Real Estate Services (HEPR) invited a group of twenty-five stakeholders to gather for a Scenario Development Think Tank in Arlington, Virginia on March 15-16, 2006. This group, made up of federal and state agency real estate professionals, environmental and planning specialists as well as private sector professionals working in public sector real estate, was invited to provide input to a project designed to develop a twenty-five year view of the future of public sector real estate.

The primary purpose of the Think Tank was to develop recommendations for critical policies, procedures, tools, technologies, and best practices for providing public sector real estate services in the years 2006-2030 based on plausible futures scenarios. Glen Hiemstra, founder of Futurist.com, facilitated the one and a half day session.

The scenario development process used was an abbreviated version of the classic Royal Dutch Shell approach to scenario planning called the Preferred Future Scenario Development Process.

The Preferred Future Scenario Development process seeks to anticipate probable and possible future scenarios and to focus them into preferred alternatives as well as to identify the critical strategic actions or issues that, if followed, will lead to the preferred future. As Exhibit 1-1 illustrates, the preferred future is part of the possible future and separate from the probable future in that it is obtainable through the conduct of certain strategic actions.

These strategic actions are ones that can be pursued in the present in order to steer intently towards the preferred future. The figure suggests that early identification of actions and strategies that shift your direction from the probable future to the preferred future is vital to successfully shaping the future.

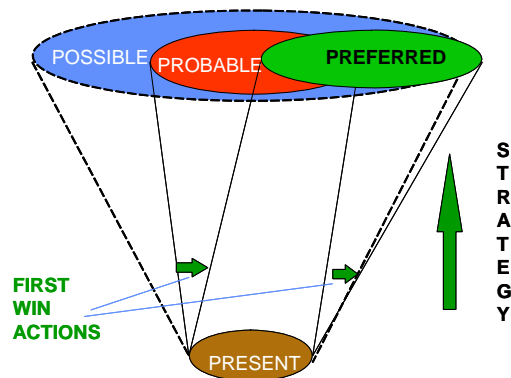


Exhibit 1-1: Preferred Future Scenario Development

The process identified likely future trends called “pre-determined elements,” and possible future developments called “critical uncertainties.” Teams then developed plausible scenarios in outline form, seeking to integrate both external developments and the resulting implications for public sector real estate.

Each team took into account the same set of pre-determined elements, and a unique set of critical uncertainties. The goal was to outline a plausible future, not to determine a mostly likely scenario. This activity leads to an exploratory style of thinking in which new options and possibilities for the issue in question, namely public sector real estate, can be discovered.

The first day of the Think Tank was devoted to exploring long-term future trends and issues and the development of four basic scenarios spanning the next twenty-five years. The intent of this work was to create a mind-set of long-term thinking, as compared to the immediate, problem-solving mentality that is typical in planning sessions.

The participants used the thinking generated by the exploration of trends and development of scenarios to zero-in on recommendations of preferred policies, practices, tools and technologies for public sector real estate in the near and longer term future. Day two of the Think Tank was dedicated to identifying a list of ideas for HEPR and others to use when developing their work plan, practices, policies and research agenda for the coming years.

The following section presents the primary outcomes of the Preferred Future Scenario Development Think Tank – the Preferred Future and the Strategic Issues for HEPR. The subsequent sections detail the process and exercises followed in developing these outcomes. The appendices present a list of the Think Tank participants, the Think Tank Agenda, and the Think Tank slides.

2. OUTCOMES

As mentioned above, the primary purpose of the Think Tank was to make recommendations for critical policies, procedures, tools, technologies and best practices for providing public sector real estate services in the years 2006-2030 based on plausible futures scenarios. This section focuses on the key results of the Think Tank - those recommendations - and the process followed in developing the scenarios and gleaning the recommendations from the scenarios.

Before being broken up into teams and getting down to the task of developing plausible future scenarios, Think Tank participants engaged in several exercises as a group. These exercises prepared the group for the kind of long-range thinking required to develop the type of scenarios envisioned under the Preferred Future Scenario Development Method. These exercises are detailed in Section 3 of this report.

Section 2.1 focuses on the process followed in building the plausible future scenarios (the actual scenarios are presented in Section 3.3). Section 2.2 discusses the images for the future that each scenario building team considered preferable. Section 2.3 highlights the preferred future elements found to be common between the scenario teams. Finally, Section 2.4 presents the specific recommendations for HEPR policies and actions that the teams identified as necessary in order to bring about the preferred future common ground elements.

2.1 Building Plausible Scenarios

Participants were assigned to specific tables upon registration. Each of the four tables – identified as yellow, red, blue and green - operated as a scenario development group from this point in the Think Tank to the end.

The first step in developing plausible scenarios was to review expected future events, trends and developments (see Section 3.2) in order to identify the trends that are so likely as to be considered “pre-determined elements” and others that are uncertain, but critical. The “pre-determined elements” by nature identify a direction, *e.g.* population will increase or funding will decrease. The “critical uncertainties”, as the name implies, could go either of two directions, but will directly impact the future of public sector real estate either way. This formed the basic information for scenario creation.

The pre-determined elements and critical uncertainties identified by the Think Tank participants included:

Pre-Determined Elements

- Greater diversity and aging of the U.S. population
- Public sector funding will not be sufficient to meet transportation or other public project needs
- Deteriorating and obsolete public infrastructure
- More severe environmental events, leading to population migrations and increases in demand for public funding
- Rapid technology advances
- Oil availability will peak and begin decline
- Increased globalization
- Changes in travel demand brought on by trends such as telecommuting, changes in transport technology and use of internet for shopping
- Sensitivity to environmental issues will continue to increase
- U.S. becomes increasingly financially constrained at all levels of government
- More Public-Private Partnerships as a way to deal with funding issues
- Security concerns will continue

Critical Uncertainties

- National disasters, *e.g.* natural, terror, or health-related, will occur but the type, level of severity, timing and types of impacts are unknown
- Changes in legislation related to eminent domain could affect the Uniform Act
- Federal legislation and policy could or could not influence use of Public Private Partnerships
- Impact of China and India - friend or foe; customer or competitor?

For the purpose of building the future scenarios within a day and a half Think Tank environment, the list of twelve pre-determined elements had to be reduced in number. The group reviewed the list and voted on the five most important elements to public sector real estate. These elements became *the* five circumstances that would definitely be involved in any possible future. The consulting team then developed each of the “critical uncertainties” into their two possible directions (therefore ending up with eight items), and randomly assigned a set of two critical uncertainties to each of the four groups. As summarized in Exhibit 2-1, this set of five predetermined elements and expanded critical uncertainties guided the development of the future scenarios.

Exhibit 2-1 Circumstances Guiding Scenario Development

Five Most Important Predetermined Elements

- 1) Greater diversity and aging of the U.S. population
- 2) Public sector funding will not be sufficient to meet transportation or other public project needs
- 3) Deteriorating and obsolete public infrastructure
- 4) More severe environmental events, leading to population migrations and increases in demand for public funding
- 5) Rapid technology advances

Expanded Critical Uncertainties:

- 1) Two national disasters occur – terrorist attack and earthquake
- 2) Two national disasters occur – pandemic flu and severe sea level rise
- 3) Severe limitations placed (through legislative actions) on the definition of “public use” on which eminent domain can be used
- 4) No significant change (through legislative action) in the definition of “public use” on which eminent domain can be used
- 5) Legislative and policy changes occur that encourage Public-Private Partnerships
- 6) Legislative and policy changes occur that discourage Public-Private Partnerships
- 7) Chinese and Indian markets significantly open to U.S. goods and services
- 8) Chinese and Indian markets significantly limited to U.S. goods and services

The groups then spent approximately two hours developing a timeline-based scenario, in outline form, noting both external trends and developments and responses and trends within public sector real estate. The goal of each team was to develop a plausible future to the year 2030. At the end of the first day, the scenarios were presented.

2.2 Preferred Future Images

At the beginning of the second day of the Think Tank, the scenario teams came together and designed a preferred future for public sector real estate assuming that their scenario was the actual future. They asked themselves, “In this scenario, what would be preferred responses in the public sector real estate community in terms of policies, practices, tools and technologies?” Each team developed a long list of ideas that are presented below. More importantly, the teams, though working under four different scenarios, ended up with a number of common ground elements – overlapping ideas of what the preferred responses in the public sector real estate community would be. These common ground elements are detailed in section 2.3.

The teams developed the following sets of ideas.

Blue Team Preferred Future

- Public/Private Partnerships:
 - Privatization – change regulations to include private partnerships
 - Change Office of Management and Budget (OMB) and Congressional

Budget Office (CBO) scoring process (the requirement to determine value of contract commitments over all years to commit/obligate those funds at

- execution of contract) to allow more private partnerships
 - Greater local share
- More partnerships between agencies (especially in planning)
- Real estate skill sets change from specialists to generalists
- Greater incentives to governments' real property management and use, i.e. funds are returned to the project and not to a general fund
- Urban Focus
 - Increase in mass transit use
 - Cluster of Resources
- Transit oriented type of real estate development (TOD)
- Focus back on rail – more rail throughout America
- Ports
 - Rebuild
 - Reinvest
- Working Flexibility
 - Telecommuting
 - Better Broadband (High Speed)
 - Virtual Teaming
- Political Process (Change)
 - Earmarking

Red Team Preferred Future

Processes/Regulations:

- Simplify and Streamline Uniform Act
 - Look to Europe
 - Outside influence of any one agency
 - Payment for acquisition and relocation periodically re-evaluated
 - Reform business relocation to increase payments and have flexibility to cover all impacts/costs
 - Residential relocation tax caps and relief.
- Establish true lead agency outside of FHWA with funding for implementing the Uniform Act.
 - Facilitate exchange of information
 - Hold Think Tank with good mix of people to guide changes and new developments in public sector real estate
- Hiring
- Professional standards
- Policies and planning in place for employing technology
- Appropriate employee/contractor management
- Prioritize program oversight
 - Need to assure qualified people doing the work
- Some real estate professionals need to be project/program managers

Financing:

- Constant and reliable source of financing – Public or Private
- Encourage multi-use, multi-dimension and multi-modal use of public real estate
 - Planning
 - Risk Management
 - Teaming

People and Skills, Professional Development, Training:

- Real estate needs different skills:
 - Higher qualifications
 - More specialized
- Need regular knowledge and experience exchanges
- Uniform Act certification used for:
 - Contracting

Law/Authority:

- New legislation to facilitate Public/Public and Public/Private Partnerships (PPP)
- Private sector needs to understand public needs/requirements

- Public sector needs to identify and understand private sector and how to evaluate them for PPPs
- Explore Virginia public/private ventures
 - Encourage unsolicited proposals
 - Are followed by competitive offer

Green Team Preferred Future

- Create an effective, timely Communication Center (FHWA)
- Develop a Predictable Process
- Have a process for more collaborative approaches for timely coordination of public/private issues
- FHWA create “Swat Teams” for disseminating information in crisis situations
- Proactive consideration of peak oil and global warming scenarios (by FHWA and other governmental agencies)
- Easier to find information on more user friendly, interactive website
- Revise Uniform Act to simplify relocation assistance
- Make flood insurance for one use only
- Create sample templates for Public/Private Partnerships (PPPs)

Yellow Team Preferred Future

- Creation of national database for cadastral information with standards, redundancy – IT Investment/Asset Management
- Supplement Uniform Act For:
 - Emergency provisions
 - Provide mechanism to determine dollar amounts versus the current inclusion of hard dollar limits
- Structure in place to manage dollar shifting in case of emergency
- Shift towards private partnerships

Asset Management:

- Effectively manage and dispose of excess under utilized land and property
- Money needs to return to managing agency
- Electronic inventory of any assets with Federal participation

- FHWA create a certification program for Local Public Agency (LPA) guidance and professional development to include Uniform Act guidance and public/private partnership development knowledge.
- “Action Team” plan for collaborative planning and action in urgent situations
- FHWA lead development of public/private coordination of identifying and facilitating new technology uses for public real estate.
 - Use of new technologies to identify comparables for relocation in “hot markets”
- Congestion Pricing on Public Roads
- Facilitate use of existing Right-of-Way for transit and urban development

- Educate public with visualizations, models (e.g., Google Earth)
- Do not underestimate public relations
- State DOTs refocus to regulatory oversight, training, inspection, management
- Title 23 – Expand to FAA/FTA/All Feds
- Develop AASHTOware Software to bring consistency to all ROW calculations
- Empower FHWA with oversight of ROW practices from state to state:
 - Funding

- Personnel
- Training
- Require adherence to Uniform Act for all use of eminent domain regardless of source of funding
 - Federal mandate for certification for State and Local Public Agencies
- (LPAs), private entities, consultants, contractors, etc.
- Reinstate or require an acquisition-relocation plan as part of the project planning process
 - Early disclosure

2.3 Preferred Future Common Ground

Each scenario development team was given a few minutes to present their preferred future to the group. The participants, working as a group, reviewed the preferred futures and identified the common themes. These were areas that, regardless of the circumstances occurring in the future, the public sector real estate community need to address in some fashion. These themes became the heart of the recommendations for public sector real estate and the consequent strategic directions for HEPR.

The preferred future common ground themes included:

- Certification and training for competency development at all government levels and for all those private entities and consultants conducting work for the government, to one set of standards.
- Create a lead agency, an action team, someone in charge. This entity would be independent, with a mission focused on the Uniform Act and public real estate more broadly. It would set and coordinate general public sector real estate policy and be responsible for oversight and enforcement. Policy areas of responsibility could include PPPs, property management and disposal.
- Policy planning for employing technology both in terms of using technology to improve *how* people work, and to change *where* people work, i.e. applying technology to reduce the need for facilities and infrastructure. Identify and facilitate technology development and databases. Deploy and train for technology.
- National emergency planning and risk management.
- Public – Private Partnerships, and Public – Public Partnerships. Education and training to facilitate acceptance of these partnerships and to identify best practices across Federal agencies and state and local agencies.
- Continual and reliable funding source must be available, *i.e.* Public-Private Partnerships are likely a necessary inevitability.
- Revision and simplification of the Uniform Act in the areas of:

- Business relocation – look into issues such as: adjustment to monetary caps (either increase or index); create last resort payment category for businesses; make actual, reasonable and necessary the base for costs and other possible revisions.
 - Global settlements – Packaging relocation entitlements (moving, mortgage interest, price differential, etc.) with the just compensation offer to reach an administrative settlement of the acquisition and relocation together as one lump sum offer is not provided for in the 2005 regulation that implements the Uniform Act. However, many real estate practitioners feel that conducting a relocation study to determine the cost of a comparable dwelling and offering that amount (global) could replace the concept of providing an acquisition payment (based on the appraised value) plus a relocation payment.
 - Automatic annual increase of monetary caps for various relocation and re-establishment payments according to some index (*e.g.* Office of Personnel Management’s Cost-of-Living Allowance or other index).
 - Provide for more predictability
- There needs to be predictability, consistency, and accountability in all public sector real estate transactions across the board. Increased coordination – between Federal agencies, states, local public agencies, private entities, contractors, consultants, etc. – is necessary to make this happen.
 - There needs to be increased communication between and amongst real estate professionals in order to achieve the predictable, consistent and high quality work required of the public sector real estate profession.

2.4 Strategic Issues for FHWA Office of Real Estate

In a final round of discussion, the Think Tank participants looked nearer term and more specifically at the kinds of policies, practices, tools and technologies that they would recommend the FHWA Office of Real Estate Services pursue in order to achieve at least some of the elements identified to be part of the preferred future. In order to accomplish this, participants asked, “What should HEPR do, learn, or prepare for in the coming years?”

- Partnerships, both public-private, and public-public
 - Formalize the process
 - Creative regulations
 - Coordinate with other agencies, other levels of government, academics and the private sector
- Develop training and certification template that can be used by other agencies and consultants.
- Peak oil and global warming: Develop scenarios for what happens when, for example, the price of gasoline increases to \$10 a gallon, or the sea level rises one foot: what are the implications for public sector real estate.

- Emergency preparedness: Identify issues to be addressed, proactively, in future emergencies and create plans for doing so. Identify where responsibilities lie.
- Evaluate information technology (IT) and make recommendations. Encourage AASHTO to take the lead in developing best practices and computer tools. Encourage greater uniformity across the country.
- FHWA should embody ideas of effective communication and processes, in all activities.
- As Uniform Act revisions are proposed, include the idea of forming an independent “Lead Agency” organization into the proposals.
- Encourage an on-going “Think Tank” or advisory group, to assist in making progress. Include a good mix of perspectives and participants, *e.g.* both public and private.
- Federal agencies should devote more resources, priority and emphasis to:
 - Program oversight
 - Outreach for consistency
 - Enforcement

3. HOW WE GOT THERE

As mentioned in the Introduction to this report, much of the first day of the Think Tank was devoted to exploring long-term future trends and issues. The group participated in a number of exercises and reviewed a number of trends as presented by the futurist facilitator designed to create a mind-set of long-term thinking. The exercises helped to remove the constraints often placed on our thinking by the more immediate need to solve problems faced in the day-to-day conduct of business. This section describes those exercises and their results and presents the trends as foreseen by the futurist facilitator.

3.1 Critical Questions

The Think Tank began with a discussion to provide participants the opportunity to note the questions that they had, both about the Think Tank itself and about public sector real estate and the over all project. No attempt was made to answer these questions or even to explore them in detail. The exercise was merely to get the questions out on the table. The following questions/ideas/issues were expressed as critical questions for public sector real estate:

- How to fit policy solutions into different agency bureaucracies; how to get a more consistent approach?

- Whether or not to focus public sector real estate needs on “public transportation” - that is, to build more facilities or to change land use policy to enable people to live nearer to work and services?
- How to deal with the aging of the public sector real estate workforce?
- How to deal with aging transportation infrastructure?
- Whether and how to expand the definition of public sector real estate (*e.g.* to include transit oriented development)?
- How to measure the impact on a community of public infrastructure and public real estate decisions such as building a bypass or adding an interchange?
- How do our ideas get filtered into policy making and communicated to the general public?
- How do we deal with reduced funding and an aging infrastructure, especially with regard to transit?
- How to reconcile multimodal development and conflicts among right-of-way users?
- What will be the legal issues with evolving eminent domain decisions?

3.2 Global, National and Real Estate Trends Shaping the Future - The Decades Activity

Think Tank participants explored long-term trends using a brainstorming technique called “decades.” In this activity, each decade beginning in 1950 was explored for the key events, trends, and developments shaping that decade, including global and national trends as well as those in public sector real estate specifically. Patterns of change were then noted in a group discussion. Finally, teams imagined that they were looking backward from the perspective of two decades in the future, and in the same manner, suggested the events, trends and developments that had occurred from 2006 to 2030. The goal was not science fiction writing but a considered forecast of likely developments that will, indeed, shape the next two decades. The results of this activity are below.

Past Decades - Events, Trends and Developments

1950’s (White Team)

- TV
- Interstate Highway System
- Korean War
- Rock n’ Roll
- Suburbia – Sprawl
- Increased use of auto
- Changes in industry
- Facilities
- Power
- Shift to suburban, rural areas (out not up)
- Northeast the center of U.S. development

1960’s

- Space program
- Extreme social change

- Property: lack of consideration for people's rights with regard to purchasing and displacing
- Urban renewal (other federal grant programs)
- 1964: Urban Mass Transit Act (UMTA) enacted – basis for current Federal Transit Administration (FTA)
- Big push to suburbia

- Population shift to sunbelt
- Progress, protests, civil rights
- Seeds of environmental movement
- Roots of public use planning (zoning)
- Cheap gas
- Freeways cut through urban downtowns

1970's (Green Team)

- Significant population growth
- Vietnam, Watergate, mistrust in government
- More leisure time
- Environmental movement begins
- Interstate highway system largely completed (with beltways)
- Suburban dispersion model continues
- Energy crises come and go twice
- "Planned Community" concept is tried
- Late 70's urban renewal is questioned

- Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) is passed in 1971
- Women's Equality movement
- Two wage-earner households become the norm
- China opened up to the world
- Negative world view of the U.S. due to foreign policy
- Increased and more ethnically diverse immigration
- National Environmental Policy Act (NEPA) and Clean Water Act enacted

1980's (Red Team)

- Soviet Union falls
- Personal computer
- Savings and Loan Failures
 - New Federal legislation

- Shift from Federal to states for social programs
- Paul Volker and monetary policy
- Amendments to Uniform Act
- Software development

1990's-2005 (Yellow Team)

- Technology: internet, cell phones, media on demand, telecommuting, email, immediacy of news, war and natural disasters, the PC
- Recreation as a driver:
 - Water access important
 - Urban revitalization
 - Health and environment emphasis
- Security
- Globalization of industry, manufacturing
- Rise of SUV and entrance of alternatives
- Acceleration of privatization
- Escaped shadow of Vietnam with respect to Military
- Iraq war

Patterns of Change

Reviewing the decades, participants noted an increasing reliance on technology and increasing complexity. Organizationally, there is a trend toward a demand for efficiency. There is social movement toward increasing respect for individual rights, balanced by an increasing depersonalization. Mobility increases, as does access to information. Globalization is an obvious theme as global interactions of all kinds increase. In terms of urban and real estate forms, there seems to be a shift from rural and urban living as dominant, to the strong suburban trend that is familiar, to a more recent shift back toward urban re-development and living. Whether this latest cycle will become significant is not yet known, but the group noted that the decades do seem to have a cyclical character.

- | | |
|---|--------------------------------|
| • Reliance on technology | • Increased information access |
| • Complexity increases | • Increased mobility |
| • Demand efficiency | • Depersonalization |
| • Rural/Urban to Suburban, back to Urban movement | • Global Interactions |
| • Increasing respect for individual rights | • Cycles |

Events, Trends and Developments 2006 – 2030

After exploring the decades, Think Tank participants turned their attention to the coming decades, and by imagining a backward view, developed a set of top forecasts of future events, trends and developments. Each group's view is presented below.

Yellow Team

- | | |
|---|---|
| • Real time security | • Personalization |
| • Transit oriented design and development | • Cycle towards more conservation, perhaps cresting and on backside |
| • Teleworking | |

- Rise of environmental concerns
- Demographic trend toward society of minorities
- Retirement, social security issues, and divide between savers and spenders
 - Longevity
 - Health care

Blue Team

- Traditional offices less important, more home and telework
- Rising sea levels, 1.5-2.0 feet (2030)
- Global warming; Ozone hole
- Serious environmental changes to coasts; more severe weather
- Trigger different building codes, health, and approach to life, such as avoiding sun
- More diversity, as majority flips to minority
- Aging population, emphasis on retirement, social security, health care
- No change anticipated in U.S. health care system
- China and India impact on use of global resources and on the U.S. economy
- Islands of transit oriented development in cities
- Fledgling but real transit networks in cities
- Super regional economic development
- More regional government structures
- More use of air rights development

Red Team

- Financial conflict between groups in need
- Demographic stress between young and old
- Energy cost dislocations
- Medical resource shortage
- Remote work locations

White Team

- Global economy
- “National” and “Community” solutions, not government solutions.
 - Use of Public-Private partnerships (PPP)
 - Capital markets accepting of PPP
- Town centers, transit oriented developments, urban movement
- Corridor focus, multi-use, multi-modal, and multi-dimensional
- Aging population leads to changes in public facilities and new safety/access issues.

Green Team

- Population
 - Aging
 - Ethnicity
 - Large increase
 - Smaller households

- More urban lifestyles, even in small towns
- More diverse lifestyles
- Sunbelt and western cities grow
- Lower standard of living
- Higher demand for services as America ages
- Energy
 - Alternative sources and higher prices
- Transportation
 - More reliance on public transit
- More Public Private Partnerships
- Environment
 - Global warming
- Government
 - More privatization of services
- Economy
 - Less consumerism, more emphasis on services, infrastructure, etc.
 - Weakened U.S. Economy

3.3 Global, National and Real Estate Trends Shaping the Future - Futurist.com Perspective

After the Think Tank participants had brainstormed and discussed their view of the future, Glen Hiemstra from Futurist.com, presented a view of trends based on data and research.

Public sector real estate will be impacted by a variety of issues over the next 25 years. These include:

- Demographics - aging, diversifying, digitally native and possibly shrinking.
- Energy – alternative fuel vehicles will require changes in transportation facilities and infrastructure.
- Environment – global warming could lead to population migration and changes in real estate values.
- Economy – the deficit, an aging population and globalization mean increased pressure on Federal resources.
- Technology – advances in nanotechnology and advanced 3-D communications have impacts on transportation and real estate-related building materials and distance communication.
- Automobiles – advances in vehicle technologies mean less real estate will be required for the same traffic density and safety will be vastly improved.
- Roadways – technology advances and changing work habits will impact required ROW.
- Transit – continued urbanization implies increased use of transit and TOD requires multi-use ROW
- Trains and Airplanes – development of high-speed, intercity rail corridors will create ROW needs and have impact on real estate values.
- Community Design – urbanization and creation of “walkable” communities will create multi-use ROW issues and have impact on real estate values.

These issues are explored in more detail in the paragraphs below.

Demographics

The nation is getting older, profoundly so. Of all the 65-year olds who ever lived, two thirds are alive today, and in 1,752 days from the time of the Think Tank, the baby boom generation, some 76-million strong, will begin to turn 65. By 2030 and beyond, as much as 20 percent of the national population will be over 65, and in many states and regions it could be as much as 30 percent of population in that age category.

If you look at the classic population pyramid chart when the century began (Exhibit 3-1 below) it still resembled the classic shape of the population - lots of younger people, a few older people. But by 2050 - As shown by Exhibit 3-2 - the population will have inverted and become rectangular in shape, with as many elders and youth.

Exhibit 3-1: 2000 Age Wave

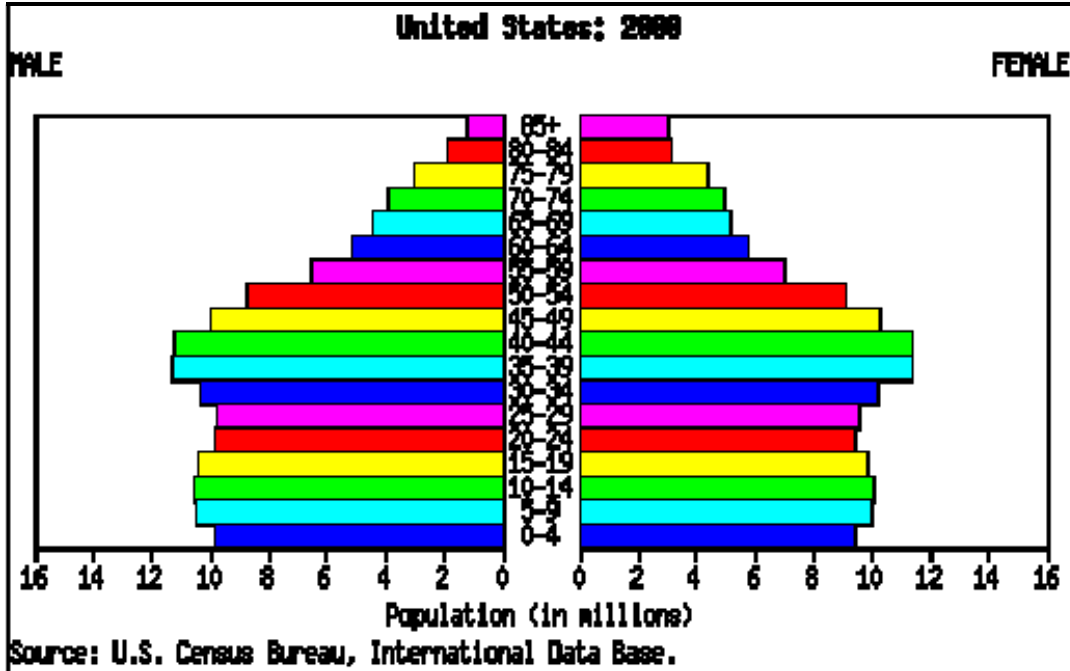
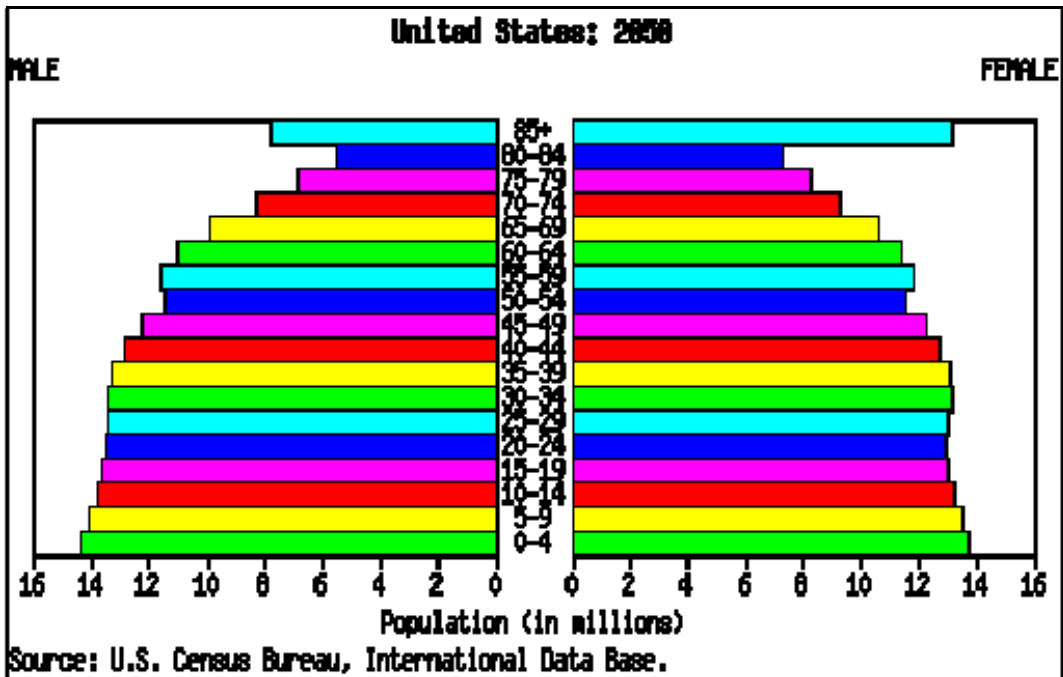


Exhibit 3-2: 2050 Age Wave



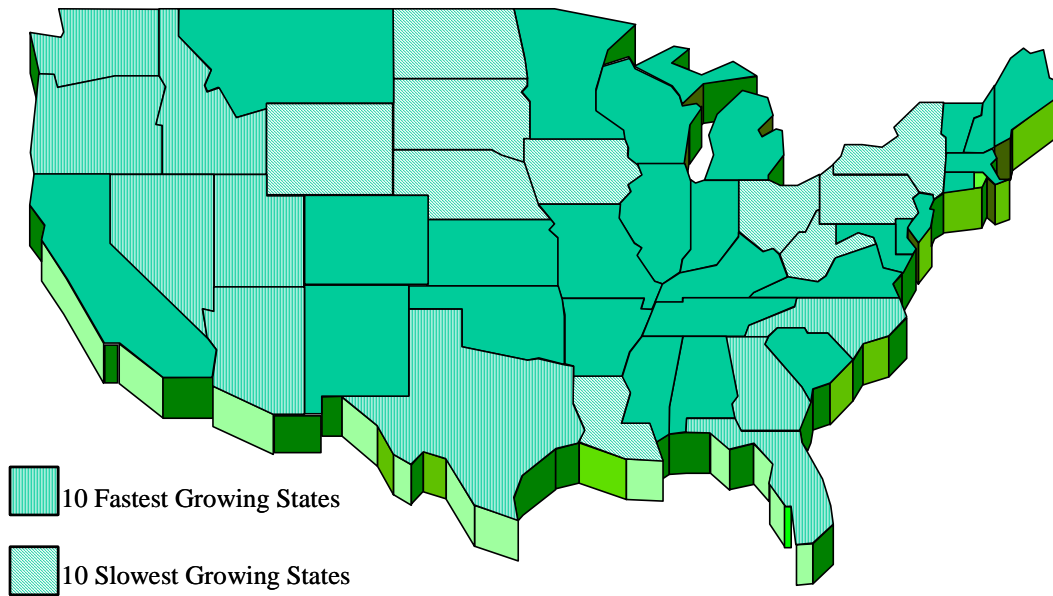
This degree of change will be disruptive, not a mere continuation of business as usual. For public sector real estate it may mean increased value for high-density living and transit oriented development that makes living and transportation easier for independent

elders. It could also intensify the challenge to develop transportation facilities and systems that are safe for older people. Some changes could include on-demand transportation services; enhancements to regular fixed-route transit; a retooling of the highway system with such features as larger lettering on signs, brighter edgelines and pavement markings using reflectors; and technologies that assist those in wheelchairs and with hearing and visual impairments better navigate sidewalks and crosswalks and more readily use the transit system.

A second population trend that is surprising to many is the impending decline of global population. Driven by falling fertility rates worldwide, entire regions of the world will go into population decline soon. Russia and Japan are already decreasing in population. In North America, fertility rates have fallen to 1.5 in Canada and 2.08 in the U.S. Since this map was created, the fertility rate in Mexico has fallen to 2.1. Within the time frame of this Think Tank event (the year 2030), it becomes possible to imagine the U.S. nearing its maximum population size, depending entirely on what happens with immigration policies. As population nears this maximum size, there will certainly be consequences for real estate values and land use.

The U.S. Census Bureau expects that a shrinking population will be postponed for some time in the U.S., until at least 2050, and in fact anticipates an overall increase of nearly 100 million people. But this population is not expected to distribute itself evenly around the country. Some regions will grow more rapidly than others, and a few may actually remain stable or shrink. The map below, Exhibit 3-3, illustrates the 10 fastest (vertical stripe) and 10 slowest (diagonal stripe) growing states. While one can ask whether these are permanent trends in the face of, for example, global warming, for the reasonable future it is safe to assume that demands on public sector real estate will differ by region.

Exhibit 3-3: 10 Fastest and Slowest Growing U.S. States, 2000 – 2030



Source: U.S. Census Bureau, Population Division, Interim State Population Projections, 2005.

One additional demographic trend is the emergence of the digital native generation. Sixty million strong, this is the generation of young people born since the early 1980s, or since personal computers, cell phones, and more recently the World Wide Web. They already use information and communication technologies in ways and at levels that are far beyond previous generations. They will both use and be available to design/maintain a future transportation system that will be highly integrated with location aware communication technology. Moreover, as entry-level employees in the public sector real estate profession, they will expect access to the latest technology and be skilled at a much higher level of automation of processes than today's working generation.

Energy

There is little doubt that the energy and transportation equation will change in fundamental ways in the next 25 years. Specifically, there are serious questions about the sustainability of a transportation infrastructure dependent on gasoline and oil, as these become more expensive and quite possibly scarce. While the subject of controversy, the concept of peak oil is now openly debated. It is generally accepted that the kind of relatively inexpensive oil on which our society has been built is nearing a peak in supply, after which either alternatives or much more expensive fossil fuels will be substituted. The fact of a peak is no longer seriously disputed, though the precise timing is. In one view the peak may be very soon. Others contend that the peak in such oil supply will not come until 2027. The difference is negligible. It is likely that in the time horizon of this study, the national fuel infrastructure will begin a process of transition away from being based purely on oil and toward a mix of alternatives.

Will we run out of oil soon? No, if you take into account potential sources such as tar sands and oil shale. But, will we thus use oil as we do today, forever? Again, the answer is no, not only because viable alternatives will be developed, but because of the next factor, global warming.

Environment

A variety of environmental issues may impact public sector real estate, including global warming. A consensus has emerged in recent years that the warming we are measuring is real and is caused to a substantial degree by the activities of industrial civilization. The warming is most clearly seen in the melting of Arctic and Antarctic ice where temperature increases are two to three times that of the rest of the planet.

What does this have to do with public sector real estate? As the planet warms up, the frequency and severity of storms will increase, the value of real estate will fluctuate, sea levels may rise enough that some real estate actually disappears, and population migrations responding to these changes will occur.

Economy

Four interacting factors suggest economic discontinuities rather than stability in the next 25 years. Rapid technology developments and convergence of technologies continues, leading to both increased productivity and churn in the nature of the economy. The past five years have seen the creation, once again, of a huge deficit drag at the Federal level, limiting options and shifting debt payments forward. As the last of the baby boomers move out of their peak spending years and are replaced by the smaller generation X cohort, the ability of U.S. consumer spending to pull the national and even global economy along becomes more problematic. Finally, growth in China and India presents a two-edge sword, sustaining a growing global economy while challenging U.S. economic leadership toward the end of the study time period. The bottom line is increased or at least maintained pressure on Federal resources in the foreseeable future.

Technology

Among many technology advances, two stand out for their potential impact on public sector real estate, nanotechnology, and advanced 3-D, wireless communications. Nanotechnology, while sounding too exotic to impact something so basic as real estate may have profound effects toward the end of the study period and important effects even earlier. Think of nanotechnology as merely the ability to work with matter at the molecular and atomic scale, where the properties of matter change in important ways. Work in this arena, being done now with substantial Federal research dollar support, is already leading to the formulation of nano-concrete, which can lead, soon, to lighter and stronger bridges that take less time to construct and which last longer. On the more distant but realistic horizon are building materials that are resistant to earthquake, light-weight, and even self-constructing.

Communications technology, including robust 3-D communications over vastly improved bandwidth communications will alter distance communications and lead to systems in which all consumers can know at all times where, for example, transit vehicles are and thus how long a wait may be. A system that seems currently to be unpredictable suddenly becomes very predictable and thus more attractive to use.

Automobiles

Hybrid and flex-fuel vehicles become the norm in the near-term future, and then become smart enough for collision avoidance. The entire real estate infrastructure will begin to interact with transportation vehicles in the medium term as they also interact with each other. Less real estate will be required for the same traffic density, and safety will be vastly improved. Automobiles and other vehicles will increasingly become moving communication devices and, if fuel cells become viable, moving electricity plants. Toward the end of the study period, automobiles will become truly “automatic,” capable of driving themselves.

Roadways

There is a traffic paradox already occurring which will gain momentum in the coming years. Traffic will increase as the standard work commute decreases. The changing nature of globalizing work will mean fewer centralized and synchronized workplaces, even while people move around constantly in order to get together, despite robust communication systems. Roadways and transportation guideways will adopt new materials such as nano-concrete and composite materials, while they also, obviously, become very intelligent. Networks of small sensors will send a constant data stream that enables better maintenance and improved highway safety. Since it is likely that freight traffic will continue its rapid growth, ways to establish separate freight corridors will be emphasized, whether these are barrier separated roads or rail systems.

Transit

A variety of converging trends suggest growing emphasis on transit and on public private partnerships to build transit oriented developments. These trends include continued urbanization as more than half, and by the end of the study period, 75 percent of the national population lives in cities and metro areas. Communication technology that enables a smart transit system, an elder population inclined to ride more than to drive, global warming and other environmental concerns, and potential breakthroughs in light-weight materials suggest that transit is likely to grow in the next 25 years, with consequent impacts on public sector real estate. No impact is greater than the growth of transit oriented development, which translates into a greater emphasis on multi-use right-of-way and changes in property values within these development areas.

Trains and Airplanes

International progress with high-speed, intercity rail is well known. Regional interest in such systems is growing in the U.S., though development lags. All of the converging forces discussed earlier, along with the economics of air travel, suggest that significant initiatives in high-speed rail (200mph and up) will appear in the next 25 years. Such corridors will offer tremendous real estate development value opportunities.

Recently, the National Aeronautics and Space Administration (NASA) and the Federal Aviation Administration (FAA), along with industry and academic partners, completed a five-year research program called the Small Aircraft Transportation System (SATS). SATS was a research and development program focused on maturing technologies needed for a small aircraft transportation system. SATS successfully demonstrated that certain technologies - "highway in the sky" navigation systems, advanced flight controls, on-board computing and automated air traffic separation and sequencing technologies - will enable safe and affordable access to virtually any runway in the nation in most weather conditions.. The study pointed out that while a small percentage of the national population lives within a 30-minute drive of a commercial airport, 95 percent of people in the U.S. live within a 30 minute drive of the nation's 5,000 or more smaller airports. Thus, the project anticipates that breakthroughs in navigation, air traffic control, and aircraft themselves can lead to significant growth in personal and private air taxi and

freight traffic into such airports. There are many economic development and real estate implications of such developments if they come to pass.

Community Design

The national shift of population toward urban and metro centers has been noted, and is an international trend as well. Denser cities, with more opportunities to retrofit for walking, biking, transit, and smart auto traffic will dominate the coming decades. The communities that attract economic vitality are walkable, vibrant and varied in that work, residential and retail are mixed in close proximity. They are the opposite of the classic industrial 9:00 to 5:00 city that emptied of people at night. Housing prices along with values around the single-family home are at the current time still driving an ex-urbanization movement, but this is countered by the re-vitalization of urban areas. Toward the end of the study period, expect the latter trend to have won out, as an aging population, high-energy costs, and changing economic dynamics push people to the center, with a variety of real estate implications.

Public Sector Real Estate

A literature survey, see the Appendix, on this profession suggests several specific trends: The work is moving from specialist to generalist in nature.

- Manual work is now being done via technology.
- Right-of-way tasks are shifting to private sector.
- Profession is shifting from being practitioners to being project managers - a more complex skill set.
- Good real estate professionals are hard to find.
- New real estate employees come untrained into the profession and thus, training is important. At the same time training is sporadic.
- Dedicated training managers are rare, undoubtedly due to budget constraints. Training is surprisingly low-tech.
- Appraisers are the only realty profession requiring a license or certification.
- The key areas of need in public sector real estate management and training are:
 - Relocation and acquisition
 - Property management
 - Project management
 - New technology and software

3.4 Four Scenarios of Possible Futures

Following the process discussed in Section 2.1, each of the four Think Tank participant teams developed a plausible future scenario and gave it a name. The scenarios were developed in a timeline fashion, beginning in 2006 and ending in 2030. Teams had long strips of paper on which they drew their timeline, noting prevailing conditions (as defined by the predetermined elements, critical uncertainties and the groups' own ideas) above the drawn line, and the resulting impacts on and responses by the public sector real estate

community below the drawn line. See Exhibit 2-1 for a review of the predetermined elements and critical uncertainties guiding the scenario development.

This section defines the critical uncertainties guiding each scenario and outlines the key components of each scenario. Not all groups completed the exercise in the allotted time. Consequently, the outlines are not uniformly complete.

Red Team – “To PPP or not to PPP”

Assigned critical uncertainties:

- No significant change achieved (through legislative action) in the definition of “public use” on which eminent domain can be used.
- Legislative and policy changes occur that discourage Public-Private Partnerships

2006 – 2010

Conditions:

- Aging population requires increase in public services
- California already at point of non-Caucasian majority population
- U.S. deficit reaches record high
- 2010 is beginning of baby boom retirement

Resulting Impacts on/Response by Public Sector Real Estate:

- Because current legislative and policy environment is not friendly to the development of PPPs, will have to develop Public-Public partnerships – i.e. increased communication between agencies and levels of government.
- Property owners more informed than ever
- Public acquisitions can occur in a more sophisticated way, e.g. virtual acquisitions; communications by phone and web
- There will be no new highway projects, just a focus on operations and maintenance of the existing network

2010-2015

Conditions:

- Rapid advances in technology
 - 25 percent of work force no longer commutes to work due to technology advances
 - More work by webcast and use of other technologies
- Increases in ethnic diversity and immigration rates lead to increased use of Spanish and other non-English languages
- Hurricanes strike Florida and Gulf Coast in 2012
 - Major bridge failures on interstate system in 2015 as a result of the stresses on the system from the hurricanes

Resulting Impacts on/Response by Public Sector Real Estate

- Uniform Act is waived in response to hurricane damage and major bridge failures
- Need real estate professionals who are well-trained in many areas:
 - bi-lingual
 - sensitive to aging population needs
 - skilled in various technologies
- Able to show property owner impacts of projects in three dimensional (3D) imagery
- Electronic real estate acquisition
- Apply technology to property management

2015 – 2020

Conditions:

- Massive transportation system failure because of two emergencies
- Smart roads developed

Resulting Impacts on/Response by Public Sector Real Estate

- Need for more money to address transportation system failures leads to implementation of various money making efforts
 - imposition of user fees for transportation
 - major tax changes to increase revenues
- Increased funding for transit and transit oriented development
- Government starts to treat real estate assets as a business
- Increased revenues are gained from leases
- Mass electronic appraisals techniques are developed
- There is an increased need for property management skills and sophistication
- Uniform Act is streamlined
 - Global settlements
 - Business relocations
- A national risk assessment policy for natural disasters is developed

2020-2025

Conditions:

- Alternative fuel used in majority of cars
- Major earthquake on west coast
- Rising sea level as result of global warming has impacts on shore towns

Resulting Impacts on/Response by Public Sector Real Estate:

- New risk assessment procedures are applied

2025-2030

Conditions:

- Baby boomers increase their dependence on public transportation
- U.S. has no majority ethnic group

Resulting Impacts on/Response by Public Sector Real Estate:

None developed due to time limitations

Yellow Team – “To Hell and Back”

Assigned Critical Uncertainties:

- National Disasters
 - Terrorist Attack
 - Earthquake
- Severe limitations placed (through legislative actions) on the definition of “public use” on which eminent domain can be used.

2006 – 2010

Conditions:

- Oil supply dries up. Per barrel price rockets through \$100
 - Embrace nuclear power as means to greater oil independence
- Public funds focused on mass transit and transit oriented development
- High speed rail returns as dominant freight transport
- Budget deficit at record high levels
- Economically viable hydrogen fuel vehicle marketed

Resulting Impact on/Response by Public Sector Real Estate:

- Decrease in number of public sector employees
- Multi-modal ROW use
- Public-private partnerships embraced and used frequently for Transit Oriented Development (TOD)
- Less ROW needed for utilities

2010-2020

Conditions:

- U.S. embraces isolationist foreign policy agenda
- High speed connections reach 70 percent of the population
 - Substantial build out of electrical transmission network
- Due to emphasis on transit in previous time period, maintenance on existing infrastructure is largely ignored. U.S. faces deteriorating and obsolete transportation infrastructure
- Economic segregation intensifies throughout decade
- India and China become dominant in the world economy
 - Ports become a focus with China and India being global market leaders
- Terrorist attack on mass transit
 - Mass transit use curtailed due to terrorist attack
 - Significant decrease in TOD
 - Public losses faith in mass transit
 - Stringent security measures enacted
 - U.S. retakes active role in foreign policy due to terrorist attack
- PPP code abuses occur
- Earthquake of 8.5 magnitude hits Arkansas-Missouri area

- Legislation enacted to implement safety measure nationwide for earthquakes
- This part of country not prepared for earthquakes so there is significant damage including damage to Interstate 40 and Interstate 31

Resulting Impacts on/Response by Public Sector Real Estate:

- Eminent domain is significantly limited as a result of the PPP code abuses
 - Use of PPPs declines due to limited eminent domain
 - Transportation and real estate funding issues even more difficult.
- Government grows again to address deteriorated condition of infrastructure
 - Increase in number of Government employees including real estate professionals
- Funding shifts from new transportation to maintenance of existing infrastructure
 - Skills of real estate professionals must follow this trend

2020-2030

Conditions:

- Only 1/5th of population commutes to work – only drive to gather socially or by choice
 - Conversion of office space to residential serviced by existing transit
 - More government funding available because little new building has to occur
- Fusion becomes viable source of power/electricity
- Transit becomes more attractive to public again
 - Aging population somewhat tentative to use transit
- Virtual hospitals and health care options available
 - Minimizes aging population's need to travel

Resulting Impacts on/Response by Public Sector Real Estate:

- Increased utilization of public sector ROW assets

Green Team – “Disaster Encourages New Trends (DENT)”

Assigned Critical Uncertainties:

- National Disasters
 - Pandemic flu
 - Significant sea level rise
- China and India markets significantly open to U.S. goods and services

2006 – 2010

Conditions:

- Failing transportation infrastructure
- Baby Boomers aging, increasing the average age of the population
- Pandemic flu hits U.S.
 - 10 percent of population lost – disproportionate losses in the elderly, young and poor

Resulting Impacts on/Response by Public Sector Real Estate: None developed.

2010-2020

Conditions:

- National State of Emergency declared
 - New Federal, state and local legislative restructuring on level of New Deal or even more extreme
- More balanced age demographic due to losses in the aging population from the flu pandemic.
- Open door immigration policy adopted
- Return to the 50’s and 60’s in terms of wealth generation and infrastructure rebuilding, but with greater technology
- Chinese and Indian markets open to U.S. goods and services
 - U.S. exports concrete, grain, airplanes, equipment, consulting services

Resulting Impacts on/Response by Public Sector Real Estate:

- Fresh look at infrastructure issues
- Ethic of “rational planning” takes hold. Rational planning (as opposed to contingent planning or advocacy planning) is a process whereby options are listed, consequences are identified and the option leading to the preferred set of consequences is selected. Rational planning emphasizes the importance of the planner's expertise in achieving the "best" path to socially defined goals

2020-2030

Conditions:

- Significant rise in sea level as a result of global warming
 - Food supply impaired
- Medical advances lead to flu cure

Resulting Impacts on/Response by Public Sector Real Estate: None developed.

Blue Team – “Sea Change”

Assigned Critical Uncertainties:

- Legislative and policy changes occur that encourage Public-Private Partnerships
- Chinese and Indian markets significantly limited to U.S. goods and services

2006 – 2010

Conditions:

- Public funds not sufficient to meet transportation/real estate needs
- Existing transportation infrastructure deteriorating significantly

Resulting Impacts on/Response by Public Sector Real Estate:

- More toll roads
- Less dependence on Federal Government funded solutions
 - Greater local share in public works projects

2010-2020

Conditions:

- Significant reinvention of government
 - Federal government is smaller
 - Role of Federal government becomes fostering innovation, research and development, promoting Public-Private Partnerships and exporting intellectual property
 - Provide market driven solutions, decision making and priority setting
- Privatization of public assets
- Federal government creates incentives for revitalizing urban areas
 - Redevelop transit to strengthen urban areas
- Rural roads privately funded
- Rapid technological advances
- Due to global warming, US experiences severe environmental events including sea level rise
 - Population migrates from coasts due to sea level rise
 - End property insurance of flood land areas
 - Create “sand belts” and consider restricting developable coastal areas

Resulting Impacts on/Response by Public Sector Real Estate:

- Significant increase in use of virtual work places
- “Green” buildings and “green” requirements for Government service providers
- Due to the smaller Federal workforce, new hires, including real estate professionals, require more training
- More leasing and privatization, less ownership
- Federal workforce becomes more generalists and program/project managers. Specific services are contracted out

2020-2030

Conditions:

- Policies in China and India close their markets to U.S. goods and services
- Latin American, Russian and European markets become increasingly important
- U.S. population becomes more ethnically diverse

Resulting Impacts on/Response by Public Sector Real Estate:

- Due to important of Latin American Markets, there is a focus on improved passenger and freight transportation in North, Central and South America.
- Transportation and other planning in border cities a priority
- Federal Government narrows focus and relies more on local government and private sector for providing transportation and real estate related services
- Focus of real estate becomes manage versus own.
- Increase in private, local government and Federal government collaborative solutions
- Focus on providing more affordable retirement housing and more affordable housing in general

APPENDIX
LITERATURE REVIEW

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