Regional Land Use Research Scan

HAMPTON ROADS TPO
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T10-05

JUNE 2010

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MILITARY LIAISONS
Kelly Johnson, Captain, U.S. Navy
Mark S. Ogle, Captain, U.S. Coast Guard

REPORT DOCUMENTATION

Title:

Regional Land Use Research Scan

Report Date:

June 2010

Authors:

Benito O. Pérez

Andy Pickard, P.E., AICP

Grant/Sponsoring Agency:

FHWA/FTA/VDOT/DRPT/Local Funds

Project Manager:

Andy Pickard, P.E., AICP

Organization Name, Address, Telephone and Website:

Hampton Roads Transportation Planning Organization

723 Woodlake Drive

Chesapeake, Virginia 23320

(757) 420-8300

http://www.hrtpo.org

Abstract:

Pursuant to the HRTPO's FY 2010 United Planning Work Program, a regional land use map project was engaged. Within the scope of the project, an understanding of the elements of a regional land use map was researched. A scan of land use efforts by other regions was also conducted. From the knowledge gathered in the scan, a regional land use map will be developed in FY 2011. This map will be a combination of comprehensive plan maps from each locality. This new resource will be available for regional planning efforts.

For more information about this report, please contact Benito Pérez, Transportation Engineer at (757) 420-8300 or bperez@hrpdcva.gov.

ACKNOWLEDGEMENTS

This report was prepared by the Hampton Roads Transportation Planning Organization (HRTPO) in cooperation with the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Virginia Department of Transportation (VDOT), and the Virginia Department of Rail and Public Transportation (DRPT). The contents of this report reflect the views of the HRTPO. The HRTPO staff is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA or VDOT. This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute the approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

This report was included as a work element in the FY 2010 Unified Planning Work Program (UPWP), which was approved by the HRTPO on June 17, 2009.

PROJECT STAFF

Dwight L. Farmer, P.E.	Executive Director/Secretary
Camelia Ravanbakht, Ph.D.	HRTPO Deputy Executive Director
Andy Pickard, P.E., AICP	Principal Transportation Engineer
Benito O. Pérez	Transportation Engineer
Dale M. Stith	Transportation Planner
Michael R. Long	Assistant General Services Manager
Christopher W. Vaigneur	Reprographic Coordinator

Executive Summary

Per the FY 2010 HRTPO Unified Planning Work Program, this Regional Land Use Map scan was included as a task. The research scan was requested for the intent of providing a snapshot of regional land use tools in other metropolitan areas, and providing the Hampton Roads region with a new resource for better understanding and coordinating locality planning at the regional level. The development of this regional land use map is an additional tool in coordinating regional development (land use and transportation), which aligns with state goals, policies, and guidance that the Federal and State policymakers have pushed for in recent years.

Studying how to develop a regional land use map, several regional planning agencies within the United States and select parts of the world were scanned for their input on how they approach regional land use development. From the findings of the research scan, several themes emerged on regional development approaches. Such themes in regional development included:

- Regional Authority – whether the regional planning agency had voluntary or legislative mandate to engage in the development of a regional development framework and/or regional land use map.
- Data Maintenance – whether data needed for the regional land use map or regional development framework was either maintained by the regional planning agency or the localities.
- Common Data Types – where most regions scanned consistently used parcel zoning as an initial base for development of a common land use classification system.
- Common Land Use Definitions – where regions integrated the various land use definitions of localities and created an equivalency table to interpret land use regionally.
- Definition of Map and Policy Purpose – where regions clearly define a purpose for the development of a regional development framework and/or regional land use map.

From the findings of the research scan, a potential regional land use map development plan was drafted. The plan looks to collect and catalog existing and/or future land use data from localities. After collecting the data, land use types will be cataloged and incorporated into a table to be synthesized into a common land use classification system. After input from the regional technical advisory committee, the common land use classification system will be applied to the land use data from the localities, and integrated into a land use map of the region which reflects the information provided by each locality.

The regional land use map will have various applications as a resource for regional long-range planning and local comprehensive plans, as well as be a valuable tool in multi-modal passenger transportation planning, non-motorized transportation planning, and freight transportation planning.

In FY 2011, the HRTPO staff will be engaged in the development of the regional land use map, pursuant to the recommendations of this research scan and regional land use map development methodology. The success and utility of the end product will be assessed and a maintenance framework will be created. The end result will be Hampton Roads' first regional land use map and a new resource for integrating land use into planning efforts.

In tandem to the development of the regional land use map, efforts to pursue a regional development framework for the Hampton Roads region are underway. This initiative, stimulated by the US Department of Housing and Urban Development Sustainable Communities Planning Grant Program, will look to develop goals and strategies for coordinated regional development. With the input from the HRTPO and HRPDC technical advisory committees, and the approval of the HRPDC Policy Board in May 2010, a proposal for this regional development framework will be generated for grant funding opportunities, as well as bring sustainable development as a topic of regional discussion going forward.

Table of Contents

List of Tables and Figures

Introduction

Frequently cited as America's First Region, Hampton Roads has undergone much development and transformation since its discovery. What has remained constant since the founding of many settlements in the region to the present day is the value of the Hampton Roads environs. From having one of the world's largest ice-free harbors, fertile agricultural lands, and pristine forests and beaches, Hampton Roads invites much economic activity across all economic sectors. Hampton Roads plays host to five predominant economic engines that stimulates the regional economy, including that of the military, tourism, maritime industries, research and technology, and higher education. Along with such economic activity comes development, population growth, and further economic innovation, creating a loop of continual transformation of the region. From such a loop of constant regional evolution, new demands on resources are imposed on the various systems, infrastructures, and institutions that allow such economic activity and development to occur. Creating a regional land use map resource to better understand expected development patterns across the region will assist with planning for these new demands.

Per the FY 2010 HRTPO Unified Planning Work Program, this Regional Land Use Map scan was included as a task. The research scan was requested for the intent of providing a snapshot of regional land use tools in other metropolitan areas, and providing the Hampton Roads region with a new resource for better understanding and coordinating locality planning at the regional level.

It is the intent of this research to provide an overview of best practices from regional entities across the United States and select parts of the world. In FY 2011, a map will be created by applying knowledge gained from the scan of other regions to the combining of land use designations found in each of Hampton Roads' locality comprehensive plan maps. This will be a GIS-intensive effort requiring the cooperation of each locality's staff. The final product will be the creation of a new resource for use in the development of the long-range transportation plan, transit planning, and other projects where land use is a key element.

The development of this regional land use map is an initial step in coordinating regional development (land use and transportation), which aligns with stated goals, polic**ies**, and guidance that the Federal and State policymakers have pushed for in recent years. From SAFETEA-LU's planning factors[1] that make mention of promoting consistency in land use and transportation improvements, to Virginia's VTRANS 2035 Long Range Transportation

[1] Coordinating Land Use and Transportation: What is the Role of Transportation?, FHWA, 2010.

Plan[2] mention of integrating regional land use and highway capacity as well as transit facilities/services, this effort will help the localities of Hampton Roads broach a long-discussed topic of national importance.

[2] VTRANS 2035, The Office of Intermodal Planning and Investment, 2010.

Literature Review

Prior to developing the regional land use map, research on the concepts of regionalism, data governance, land use planning, and sustainability was conducted. A literature review of these concepts helped provide an understanding of the guiding principles which are part of the development of a regional land use map.

Land Use Planning

With regional land use planning, it is the intent of regional planners of improving the regional quality of life, improving inter-locality planning coordination, limiting the duplication of capital facilities across localities, and limiting adverse land use interference between localities[3]. Thinking regionally when it comes to land use planning, regional development takes on a seamless regional fabric not only to the coordinated localities, but to the stakeholders and general public as well.

Sustainability

In many policy and development circles, the topic of sustainability has been a buzz word. Sustainability is starting to garner importance in the regional land use and transportation planning discussions nationwide. Sustainability means "meeting the current needs [of the region] that improve socio-economic and environmental well being without jeopardizing the needs and well being of future generations"[4]. Taking the definition of sustainability further, it can be broken down into planning for environmental quality, social equity, and the economic development of an area/region[5].

As resources become scarce, yet the needs of the public arise, localities increasingly have to think of new ways to provide the goods and services expected of them. Regional collaboration has brought these localities together and has opened up opportunities to pool resources to better meet the needs of the regional public, as well as conserve on resources by limiting bureaucratic redundancy. Furthermore, in some metropolitan areas, localities are constrained by the land available for further development without compromising the general welfare of the public. In such situations, localities are looking to complement neighboring development with specialized enhanced development niches that limits redundancy, and also helps to bring cohesion back to urban cores.

Regionalism

In the scope of the political process in transportation planning, there has been resurgence in the concept of regionalism. Regionalism is a concept dating from the 1920s, where social elites were devising a new level of government to address urban and rural needs of a

[3] Contemporary Urban Planning, 3-4, 2006.
[4] The Geography of Urban Transportation, 27, 2004.
[5] Contemporary Urban Planning, 244, 2006.

region. Aims of the time were to perfect the region and address comprehensive, idealistic goals of society[6, 7].

In today's political and fiscal climate, regionalism has taken on a new connotation with policy makers, dealing with growing population needs with limited resources. Because much of the decisions affecting localities are moving away from those local entities, coupled with the negative forces impacting local socio-economics, localities are looking towards regionalism to adapt to the new operating environment. Regionalism has brought regional localities together to devise regional strategies, leverage regional resources, and convey regional priorities with a unified stance[8]. The regional approach is meant to address old standing ideas as to what is best for the region, done by reorganizing pieces of the region in an efficient, qualitative manner with value led judgment[9].

Data Governance

When it comes to the work conducted by regional planners working in concert with multiple localities, there is much data that cycle through in developing, implementing, and evaluating land use controls. To maintain an accepted level of analysis in the work conducted and tools developed, the data has to be handled properly. Data governance, as it is termed, focuses on aspects of data quality, data management, process management, and risk management of organizational data[10].

[6] Critical Planning, 53, 2002.
[7] Regionalism and the creation of the "MPO", BHAMMPO, 2010.
[8] Critical Planning, 7, 2002.
[9] Critical Planning, 49, 2002.
[10] Data Governance Imperative, IT Governance, 2009.

Agency Research

In an effort to develop a reputable regional land use map in an efficient and timely manner, a scan of US and international regional planning agencies was conducted. A range of agencies were considered for peer review that included a cross section of agency types, locations, and organizations so that this process could benefit from lessons learned and an understanding of the strengths and weaknesses of established methodologies. Information gathered from these reviews were considered in the development of a common land use classification system, data governance protocol, inter-jurisdictional collaboration principles, and the framework for a regional land use policy.

Agency Selection

In selecting metropolitan planning organizations (MPOs) that employ regional land use maps and/or policies, an initial national scan was conducted by the use of an internet search engine. The search scanned for documents and agency websites with mention on regional land use. From this initial search, a few MPOs were identified, and scrutinized further for information. A second wave of selection was done by random selection and investigation of major American cities spread regionally across the country. The intent was to have a diverse selection of metropolitan planning organizations representing large and small metropolitan areas, as well as representing the various regions of the United States. To enhance the agency research, agencies were also selected from international locations as well.

In the following four pages, there are maps of the agencies that were reviewed. Within the maps, icons denoted in yellow were scanned in this report, whereas icons denoted in blue were scanned but were not added to this report as they did not add new perspectives or information to the discussion. In the next subsequent pages, key information learned from each scanned individual case agency will be reviewed.

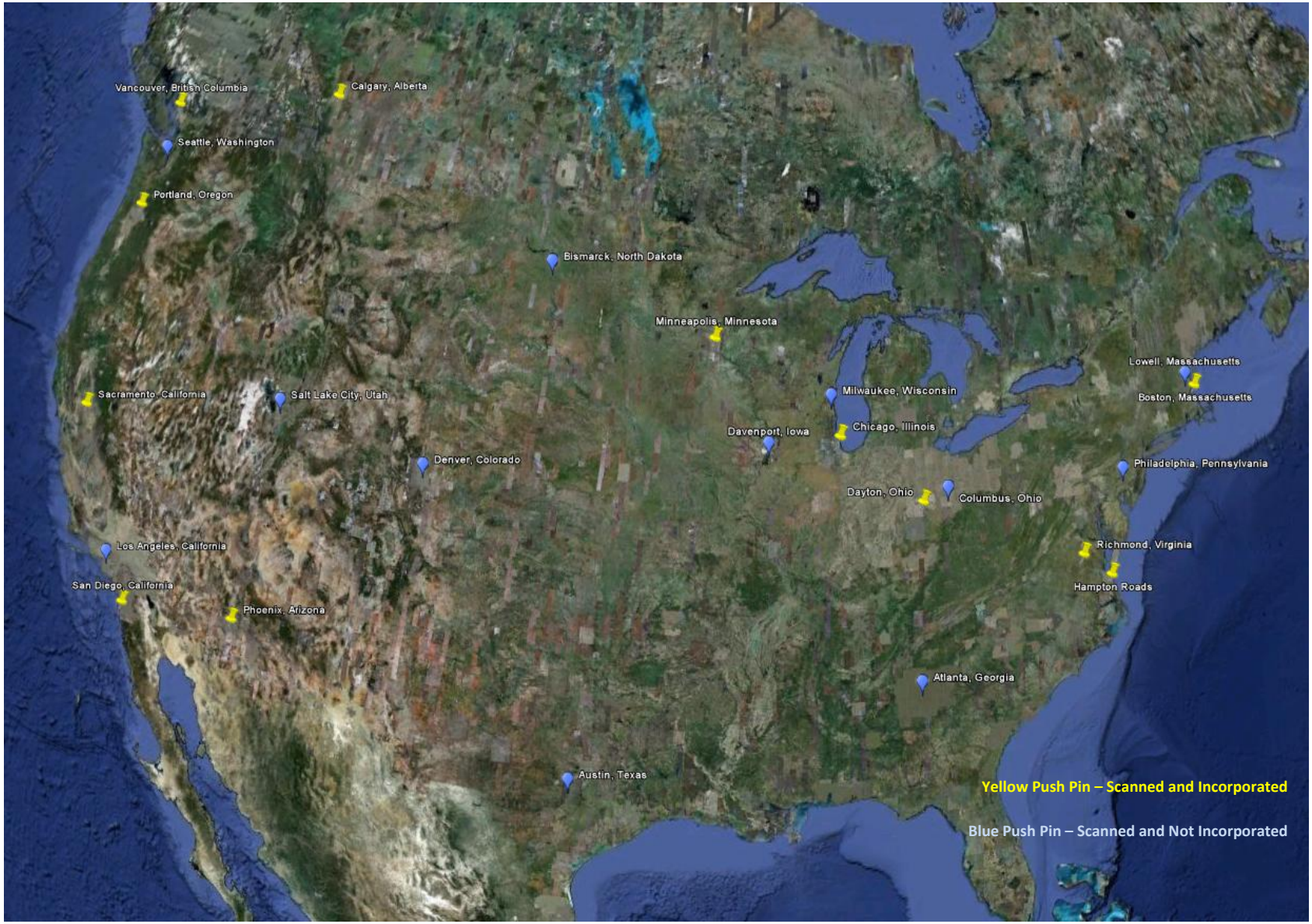

Figure 1: Map of Scanned North American Metro Areas [Map Provided by Google Earth, © 2010]

Figure 2: Map of Scanned South American Metro Areas [Map Provided by Google Earth, © 2010]

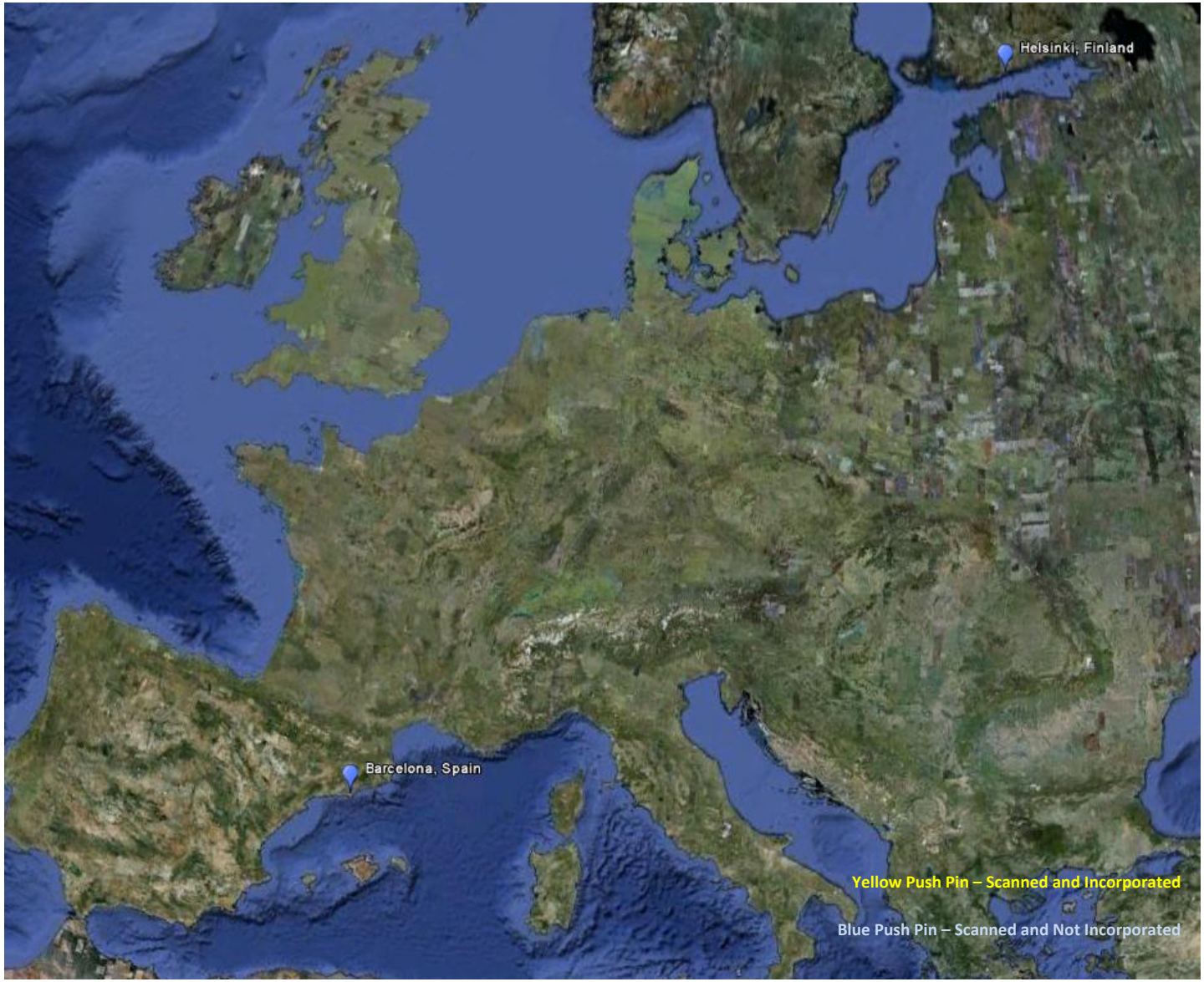

Figure 3: Map of Scanned European Metro Areas [Map Provided by Google Earth, © 2010]

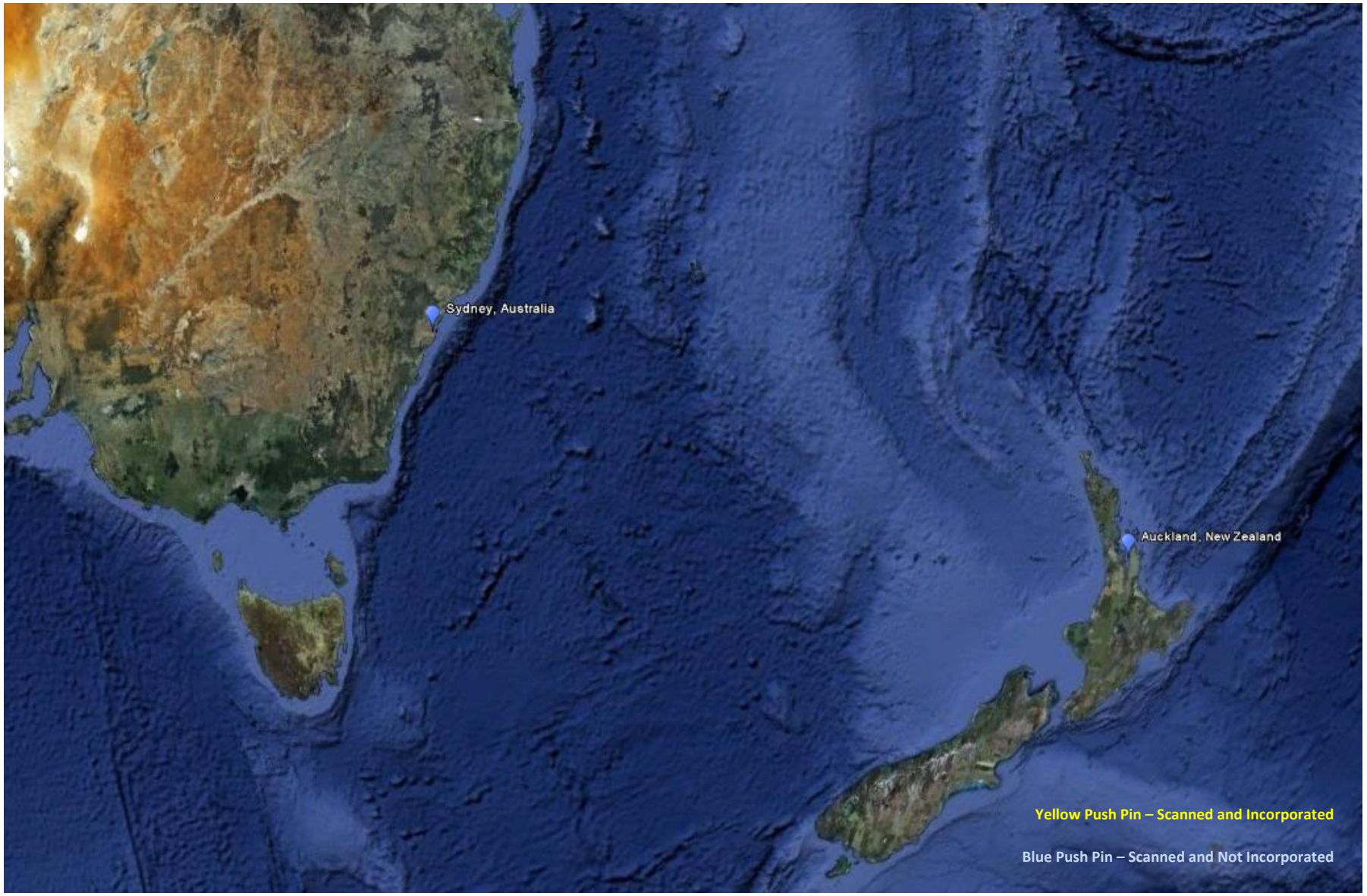

Figure 4: Map of Scanned Oceanic Metro Areas [Map Provided by Google Earth, © 2010]

US Agencies

Maricopa Association of Governments (Phoenix, Arizona)

The Maricopa Association of Governments (MAG) is the regional planning agency of the Greater Phoenix, Arizona area and was established in 1967. MAG serves a population of more than 3 million and consists of the 25 incorporated cities and towns within Maricopa County and the contiguous urbanized area, three Native American Indian Communities, and Maricopa County. MAG is responsible for regional planning and policy decisions in areas of transportation, air quality, water quality, and human services. Furthermore, MAG is responsible for generating official state population estimates and projections for the region[11].

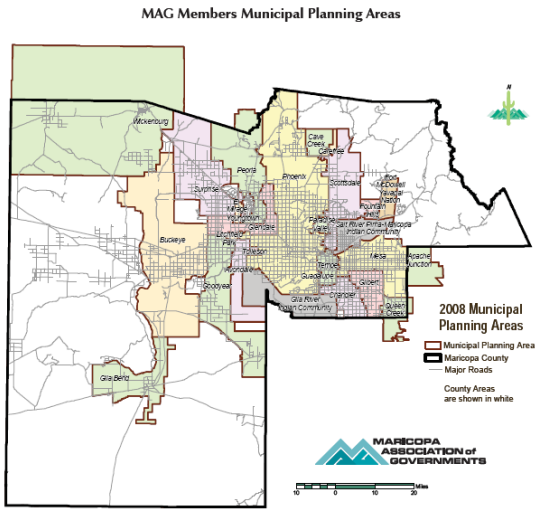

Figure 5: Maricopa Association of Governments Planning Area [Map Provided by MAG, 2010]

MAG has a regional transportation plan that it recently adopted in 2007. From that, there is no regional land use plan for the Greater Phoenix area. This is the result of local government control over land use decisions. What MAG does have for the Greater Phoenix area are three regional land use datasets. With regional mandate, MAG maintains regional GIS files, including that of land use for the member localities[12]. Among the datasets include an existing land use layer originating from the property tax assessor's office from each locality, a general land use plan/amendment layer from each locality's digitized plan, and a 2000 GIS consultant enhancement layer in which MAG maintains from this point forward. Within the protocols of maintaining the regional GIS land use layers, MAG has member localities review the data annually. As land use amendments are approved by member localities, MAG makes the appropriate update as soon as the information is received, to

[11] From Maricopa Association of Governments
[12] From phone call: Anubhav Bagley, Maricopa Association of Governments

maintain current data. As known development becomes known on certain land parcels, the existing land use data is superseded by the more timely known development use.

In bridging the divide in creating a regional land use map layer, MAG has developed a common land use classification system. The classification system is to ensure a consistent broad land use definition across the region. This regional land use map feeds into MAG's socioeconomic and land use modeling efforts.

Sacramento Area Council of Governments (Sacramento, California)

The Sacramento Area Council of Governments (SACOG) is the regional planning agency of the Greater Sacramento, California area. Its members include the counties of El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba as well as 22 cities within the region, with a population of approximately 2,056,900 people. SACOG prepares the region's long-range transportation plan and assists in planning for transit, bicycle networks, clean air, and airport land uses[13].

Figure 6: Sacramento Area Council of Governments Planning Area [Map Provided by SACOG, 2010]

SACOG initiated the development of a regional land use map as a result of a regional land use and transportation study commissioned by their policy board in 2002. The intent of the study was to understand what the current development capacity of the region was compared to the projected demand. No regional land use policy exists for the region, but as part of their latest growth management plan, named the Blueprint Plan, there was a regional visioning exercise (comprising of 37 regional workshops and 2 regional forums) to outline a regional land use vision. This plan was adopted by the SACOG policy board, to be abided by voluntarily[14]. The public raised concerns about the regional land use study and

[13] From Sacramento Area Council of Governments, 2009
[14] From Kacey Lizon, Sacramento Area Council of Governments.

vision on the grounds of such an exercise promotes rampant growth or takes over the local land use authority. Localities also raised similar concerns of the regional planning agency usurping their planning authority.

In developing the regional land use map, several data sources were consulted. For land use data, local land use plans were consulted. This data also was supplemented with local assessor parcel files via a regional GIS cooperative. This data from the localities is then translated into a common land use classification system, as developed by SACOG. In developing the common land use classification system, SACOG developed a composite of local land uses based on similarity to density/intensity range, and then vetted the composite land use classification system via the regional planning directors. The providing source of data maintains the original land use data, and SACOG requests updates periodically. SACOG updates its regional land use map every 3-5 years, alongside the regional transportation plan update.

San Diego Association of Governments (San Diego, California)

The San Diego Association of Governments (SANDAG) is the regional planning agency of the Greater San Diego, California area. SANDAG serves a population of more than 3 million and includes the County of San Diego, 18 member cities, and advisory representatives from Imperial County, the U.S. Department of Defense, Caltrans, San Diego Unified Port District, Metropolitan Transit System, North County Transit District, San Diego County Water Authority, Southern California Tribal Chairmen's Association, and Mexico[15]. SANDAG serves as the forum for regional decision-making, building consensus, making strategic plans, obtaining and allocating resources, planning, engineering, and building public transportation, and providing information on a broad range of topics pertinent to the region's quality of life.

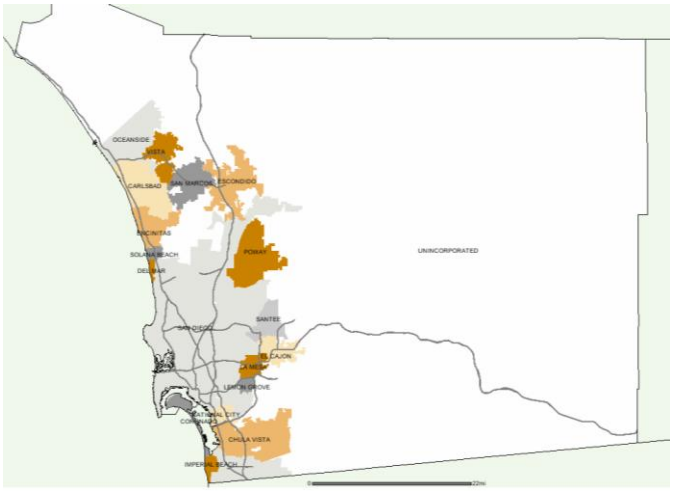

Figure 7: San Diego Association of Governments Planning Area [Map Provided by SANDAG, 2010]

[15] San Diego Association of Governments

SANDAG developed a Regional Comprehensive Plan (RCP), adopted by their policy board in July 2004. The basis of this RCP, structured similarly as a local comprehensive plan, is to provide a framework to coordinate local and regional policy decisions across various elements of livability and sustainability of the region. The RCP looks at the plans developed on the local level as a whole, assess their collective impacts, and examines cumulative development trends into the future[16].

One of the maps developed by SANDAG for their Regional Comprehensive Plan is that of the Smart Growth Concept Map. This map, structured as the regional land use map, looks to identify smart growth areas. The smart growth areas describe generic land use characteristics, as well as transportation needs (general and mass transportation) of that land use. Design principles unite the various land use characteristics. This map is updated every 3-5 years, in alignment with the Regional Transportation Plan update. Updates to this map integrate future identified smart growth areas from localities and loop back the smart growth map to the localities to factor into their own comprehensive plan updates.

Chicago Metropolitan Agency for Planning (Chicago, Illinois)

The Chicago Metropolitan Agency for Planning (CMAP) is the regional planning organization of the Greater Chicago area, dating back from two separate predecessor organizations to 1957. CMAP serves a population of close to 10 million and includes the City of Chicago and the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will[17]. CMAP is responsible for developing metropolitan Chicago's comprehensive regional plan covering land use, transportation, natural environment, economic development, housing, and human services.

CMAP is currently in the final stages of developing their first comprehensive regional plan. The plan, named GOTO 2040, identifies polices, strategies, and investments needed for the region in the various aspects of livability it is charged to do by legislative mandate. Within such work, there is a foundation of regional land use planning. It has been recognized since the 1970s of the need for coordinated regional land use decisions. As such, CMAP's predecessor planning agency adopted a Regional Land Use Policy Plan in 1978, with major updates in 1984, 1992, and 2004[18]. The plan advocated the encouragement of future coordination of land use and water quality issues, as well as develops a regional land use map among other issues.

[16] From SANDAG's Regional Comprehensive Plan Fact Sheet, February 2007.
[17] From Chicago Metropolitan Agency for Planning, 2010.
[18] From NIPC Plans and Policies (Legacy Documents to CMAP), 2007

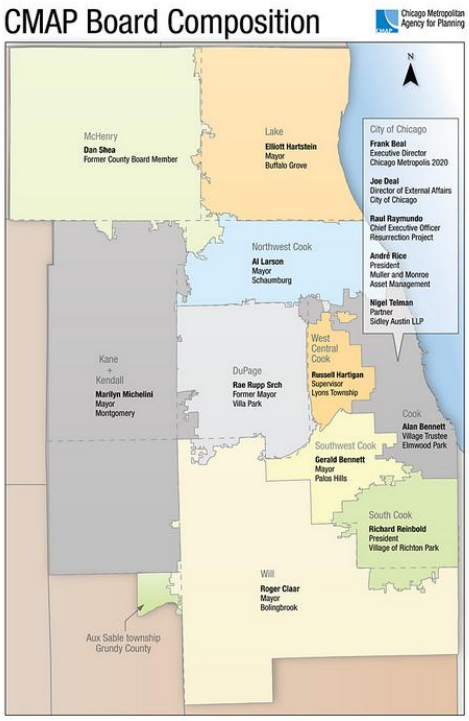

Figure 8: Chicago Metropolitan Agency for Planning Planning Area [Map Provided by CMAP, 2010]

The latest regional land use map developed by CMAP was released in 2005. Within the regional land use map, data was collected from stakeholders, academic institutions, consultants, and supplemented with colored orthorectified aerial photography. Land use was classified into 49 categories, and updated in cycle with the regional comprehensive plan.

Metropolitan Area Planning Council (Boston, Massachusetts)

The Metropolitan Area Planning Council (MAPC) is the regional planning agency of the Greater Boston area and was established in 1963. MAPC serves a population of more than 3 million and includes the City of Boston and 100 other member communities[19]. MAPC is responsible for promoting smart growth and regional collaboration, which includes protecting the environment, supporting economic development, encouraging sustainable land use, improving transportation, bolstering affordable housing, ensuring public safety, advancing equity and opportunity among people of all backgrounds, and fostering collaboration among municipalities.

[19] From Metropolitan Area Planning Council, 2010

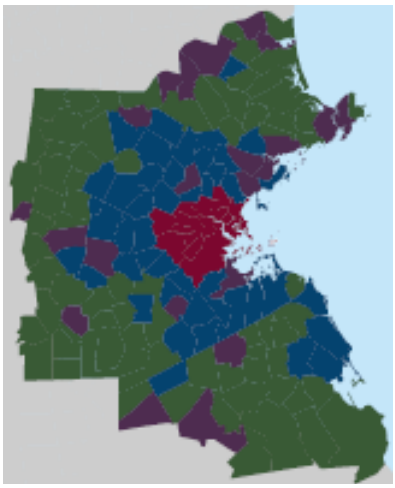

Figure 9: Metropolitan Area Planning Council Planning Area [Map Provided by MAPC, 2010]

MAPC implemented a regional development plan in 2008, adopted as MetroFuture 2030. MetroFuture was developed over the course of six years out of regional concerns regarding housing prices, environmental resources, and transportation. The intent of the plan was to create a shared regional vision and plan for the region, an implementation strategy, and a stakeholder constituency that would advocate for the plan's implementation. As to a regional land use policy, no policy exists in Massachusetts, due to state legislation giving land use authority to the local government.

In developing the regional development plan, several data sources were consulted. For historical and current land use, data was retrieved from the state's GIS office. Zoning data also was retrieved from a state build out study on all state municipalities[20]. It was on the state level where a standardized land use classification system was generated from municipal zoning codes for a consistent state zoning layer. Socioeconomic and transportation data originated from the local MPO and the US Census. Related environmental layers for the map were retrieved from the state's GIS office. Unfortunately, most data retrieved for the regional development plan has various unofficial maintenance schedules, eroding the quality of the data.

Metropolitan Council (Minneapolis, Minnesota)

The Metropolitan Council (MetC) is the regional planning agency of the Twin Cities area of Minneapolis and St. Paul, Minnesota and was established in 1967. MetC serves a population of more than 3 million and includes the cities of Minneapolis, St. Paul and the counties of Anoka, Hennepin, Carver, Scott, Dakota, Washington, and Ramsey. MetC has multiple responsibilities mandated by the Minnesota state legislature[21]. Among the responsibilities of MetC include operating the regional bus system, treat wastewater,

[20] From Tim Reardon, Metropolitan Area Planning Council
[21] From Metropolitan Council, 2010

regional planning, population forecasting, housing services, and regional framework and planning for regional systems.

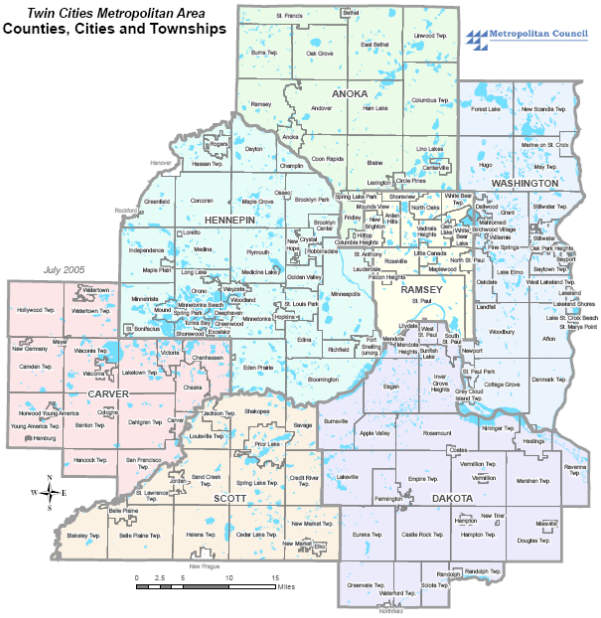

Figure 10: Metropolitan Council Planning Area [Map Provided by MetC, 2010]

MetC has a regional land use map and a Regional Development Framework that is used in conjunction with local planning efforts, per state mandate dating back as early as 1976, but clearly specified since 1999. Per Minnesota's latest Metropolitan Land Planning Act (2007), the Metropolitan Council is responsible for preparing and adopting a comprehensive development guide for the metropolitan area[22]. Within this plan, MetC reviews local comprehensive plans for regional compatibility and conformity to the Regional Development Framework. The legislature enacted the act in recognition of the interdependency of local governments within a metropolitan area. MetC has developed a Local Planning Handbook for localities, encompassing planning guidance from the Regional Development Framework and the state mandate as they draft local comprehensive plans.

In developing the regional land use maps, several data sources were consulted. For current and future land use, data was retrieved from the localities as they submit their comprehensive plans and amendments for review. MetC updates and maintains the regional land use data quarterly, to reflect local land use amendments and comprehensive plan updates. From the compilation of current and future land use plans from the localities, MetC develops the region's current and future land use maps[23]. Merging the data together, MetC had to develop a regional land use classification system, rectifying differences

[22] From Metropolitan Council & MN State Legislature, 2007
[23] From Mark VanderSchaaf, Metropolitan Council.

between local land use classifications. The resulting regional land use classification system yielded 57 distinct land uses, based on land use function versus ownership. If local land use had classification based on ownership, MetC had to reclassify the local land use with aerial imagery into regional land use. With the development of a regional land use classification system, localities have adopted it, and are submitting local comprehensive plan updates in that classification system, allowing easier integration into the regional land use map. It furthermore underscores the regionalization of the comprehensive plan update. The public also had a hand in the development of the classification system, providing comments as to how the specific land use codes were defined.

Richmond Regional Planning District Commission (Richmond, Virginia)

The Richmond Regional Planning District Commission (RRPDC) is the regional planning agency of the Greater Richmond, Virginia area, adjacent to the Hampton Roads region to the northwest, and was established in 1969. RRPDC serves a population of about 1 million and includes the City of Richmond, the Town of Ashland, the counties of Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, and Powhatan. RRPDC is responsible for regional planning within transportation, water resources, and solid waste, as well as providing local technical assistance and information services, per Virginia legislative mandate, the Virginia Area Development Act of 1968.

Figure 11: Richmond Regional Planning District Commission Planning Area [Map Provided by RRPDC, 2010]

RRPDC is developing a regional future land use map, with compilation of locality future land use maps and data. Reviewing the description of local future land use categories,

RRPDC developed a draft common regional future land use classification system[24]. The regional land use classification system was based on commonly defined land use types and associated densities. There is ongoing work as to refinement on the land use symbology within the map.

Miami Valley Regional Planning Commission (Dayton, Ohio)

The Miami Valley Regional Planning Commission (MVRPC) is the regional planning agency of the Greater Dayton, Ohio area. MVRPC serves a population of nearly 1 million and includes the City of Dayton and the counties of Miami, Montgomery, Greene, and a portion of Warren[25]. MVRPC is responsible for regional planning activities in transportation, land use, and the environment as well as local technical assistance.

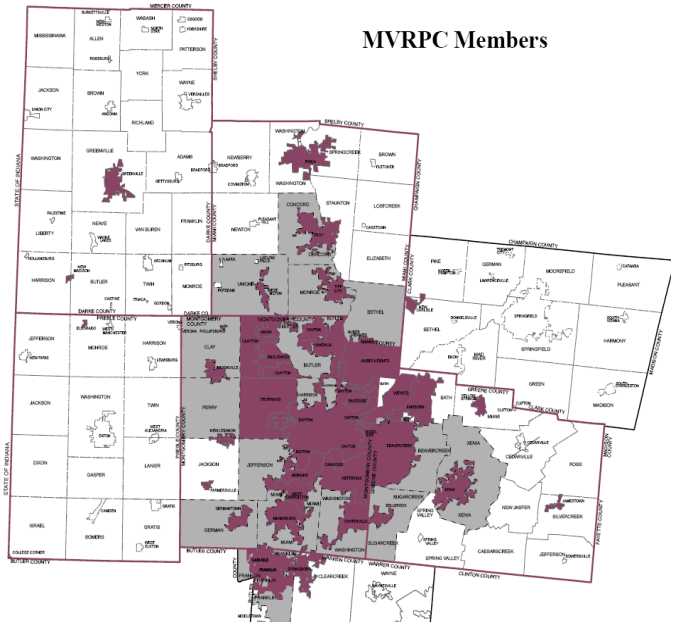

Figure 12: Miami Valley Regional Planning Commission Planning Area [Map Provided by MVRPC, 2010]

MVRPC started a four year regional land use planning initiative in 2007, named Going Places: An Integrated Land Use Vision for the Miami Valley Region. The goal of this initiative is to create a regional growth framework via buy-in from regional stakeholders. Regional stakeholders saw the need for such an initiative as they deliberated regional transportation investments. The state of Ohio is supporting the endeavor through some state grants promoting intergovernmental collaboration. The MVRPC is currently in the process of engaging the public to refine the regional growth framework for the region, as the plan starts to take form[26].

[24] From Sarah Smith, Richmond Regional Planning District Commission.
[25] From the Miami Valley Regional Planning Commission.
[26] From Martin Kim, Miami Valley Regional Planning Commission.

In developing the regional land use map tied to this Going Places initiative, data was collected from various entities. Data ranging from environmental, parcel, census, and real estate data were collected and incorporated from state, and regional sources, while real estate data originated at the local level. Data maintenance is delegated to the MVRPC and done when feasible and necessary. To create consistency across the data, data was associated down to county parcel data, for easy regional merger. For the creation of the common land use classification system, the property auditory classification system was used as the guiding system. From such a classification system, used by all localities, the land uses were categorized into generalized land uses for the regional scale map.

Metropolitan Service District (Portland, Oregon)

The Metropolitan Service District (Metro) is the elected regional planning agency of the Greater Portland area and was established in 1977[27]. Metro serves a population of about 1.5 million and includes the City of Portland, Oregon, 25 other cities, and the counties of Clackamas, Multnomah, and Washington. Metro is responsible for solid waste management and recycling, preservation of natural areas, long-range planning, transportation planning, urban growth boundary management, habitat restoration, venues for conventions, exhibits, and performing arts, and operating the Portland Zoo.

Figure 13: Metropolitan Service District Planning Area [Map Provided by METRO, 2010]

Through the charter giving Metro authority of a regionally elected government entity, the regional entity developed a Regional Framework Plan, adopted in 1997 and amended in 2005[28]. The Regional Framework Plan, enforced by the Metro charter and the state's growth management laws, has to comply with the state's land use plan. Furthermore,

[27] From Oregon Metro, 2010.
[28] From Regional Framework Plan, Oregon Metro, 2010.

localities within Metro's urban growth boundary have to comply with Metro's Regional Framework Plan. The framework plan covers aspects of land use, transportation, environment, health and water issues, and emergency management issues.

Within the Regional Framework Plan, Metro has a land information database named the regional land information system (RLIS). RLIS, developed in the early 1990s, was initially based on Census geography (Traffic Analysis Zones or Census Blocks), but localities pushed for the land use data to be based on parcels, since it is tied to locality tax revenues. With the localities providing parcel data, Oregon DOT providing roadway network information and environmental features, the land use database was populated[29]. Data is maintained on a quarterly basis, with updates fed from regional stakeholders, and funded by providing the data for a charge to the private sector and emergency management agencies. Data is double checked annually with aerial photography to validate land use information. From this, public involvement is enhanced with land use modeling exercises tied to proposed policies, as well as entrepreneurship generated from the data provided.

International Agencies

Canada

Calgary Regional Partnership (Calgary, Alberta, Canada)

The Calgary Regional Partnership (CRP) is the voluntary regional planning agency of the Greater Calgary area and was established in 2000, descending from its predecessor Regional Planning Commission originating from 1955[30]. CRP serves a population of more than 1 million and includes the City of Calgary, seventeen municipalities, and one Native American "First Nation" tribe. CRP is responsible for promoting regional planning and consensus in the areas of emergency response, transportation, water resources, waste management, and economic development[31].

CRP implemented a regional development plan in June 2009, adopted as the Calgary Metropolitan Plan. The Calgary Metropolitan Plan was developed over the course of four years out of regional concerns of future regional population growth[32]. Furthermore, the plan is a required element of the provincial land use framework. The intent of the plan is to balance the regional needs in infrastructure and services, tied to regional development patterns and environmental preservation. The Calgary Metropolitan Plan is a required planning document advocating regional coordination, mandated by provincial planning laws that vary slightly by province in Canada.

[29] From Matteo Luccio, ArcNews Online, 2010.
[30] From Calgary Regional Partnership, 2009.
[31] From Calgary Regional Partnership Profile, 2004.
[32] From the Calgary Metropolitan Plan, 2009.

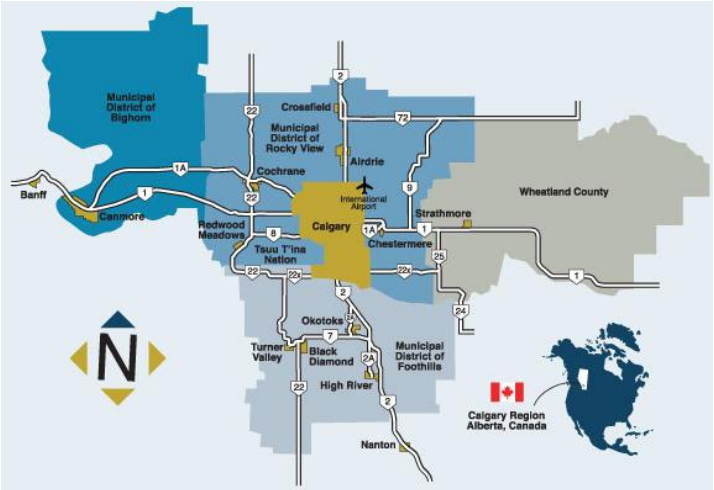

Figure 14: Calgary Regional Partnership Planning Area [Map Provided by CRP, 2010]

In developing the regional development plan, a development map was developed. The development map is rudimentary in nature; defining where developed lands currently exist in context to environmental features and green spaces. From that, future commercial/industrial development areas as well as urban nodes/areas are denoted. No further detailed land use information exists in the regional development map. This is attributed to the voluntary nature of the regional partnership, and not superseding local planning authority not already vested by provincial planning laws.

Greater Vancouver Regional District (Vancouver, British Columbia, Canada)

The Greater Vancouver Regional District (Metro Vancouver) is the consortium of regional corporate entities of the Greater Vancouver area and was established in 1967. Metro Vancouver serves a population of more than 2 million and includes the City of Vancouver and 21 other member municipalities, an electoral district, and one Native American "First Nation" tribe. Metro Vancouver is responsible for the delivery of essential regional utilities as well as regional growth and environmental planning[33].

Metro Vancouver has developed a draft regional growth strategy in late 2009, named Metro Vancouver 2040: Shaping our future. Started in late 2007 and slated for completion in late 2010, Vancouver's regional growth strategy shapes a regional growth policy around the concept of sustainability across its regional responsibilities. From adoption of this regional growth strategy, member municipalities will be required to update their local community plans (US equivalent is the local comprehensive plan) to conform to the growth framework.

[33] From Metro Vancouver, 2010.

Figure 15: Greater Vancouver Regional District Planning Area [Map Provided by Metro Vancouver, 2010]

For the regional development plan, a development map was created. The development map is rudimentary in nature; defining where developed urban lands currently exist in context to environmental features and green spaces. From that, commercial/industrial development areas as well as urban nodes are denoted. No further detailed land use information exists in the regional development map. This is attributed to the intent that local land use decisions should be done locally, and such decisions are required to conform to broad regional goals and strategies[34].

Coordenação da Região Metropolitana de Curitiba(Curitiba, Paraná, Brasil)

The Coordenação da Região Metropolitana de Curitiba (COMEC) is the regional planning agency of the Greater Curitiba area and was established in 1974. COMEC serves a population of more than 3 million and includes the City of Curitiba and 26 other member municipalities[35]. COMEC, operating under the authority of the state of Paraná, is responsible for integrated regional planning efforts, the provision of regional services, coordinating municipal plans with the regional growth plan, promoting urban renewal, providing statistical data of the region, and other coordinated regional needs.

[34] From Draft Regional Growth Strategy, Chapter 6, Metro Vancouver, 2009.
[35] From Coordenação da Região Metropolitana de Curitiba, 2009.

Figure 16: Coordenação da Região Metropolitana de Curitiba Planning Area [Map Provided by COMEC, 2010]

In 2006, COMEC adopted the Integrated Development Plan (PDI), locally known as the Plano De Desenvolvimento Integrado Da Região Metropolitana de Curitiba. This PDI outlines the current regional existing conditions, regional institutional organization and regional development guidelines[36]. The PDI serves as guidance for member municipalities to work together for coordinated regional effort.

In developing the regional development plan, data is collected and maintained by COMEC, and Curitiba's city planning agency, the Instituto de Pesquisa e Planejamento Urbano de Curitiba (IPPUC). As it relates to the regional land use maps of the region, the PDI outlines land use according to urban, industrial, institutional, or preservation uses, then zoned according to parcel size/density within the urban areas[37]. Outside the urban developed area, land is zoned according to environmental preservation and conservation priority, with higher priority given towards conservation lands in the regional water basin. Much of the land use planning efforts of the region focuses on environmental preservation, advocated from the principal city of Curitiba.

[36] From Plano De Desenvolvimento Integrado Da Região Metropolitana de Curitiba, 2006.
[37] From Part 2, Pages 162 & 174, Plano De Desenvolvimento Integrado Da Região Metropolitana de Curitiba, 2006.

Common Elements and Lessons Learned

Within the scope of the agency research, there were key issues that were common throughout. These issues, though varying in how they were defined by each agency and region, are issues of contemplation as the Hampton Roads region starts to develop the regional land use map and associated policies behind the map. From the case studies, common elements included:

- Regional authority
- Data maintenance responsibilities
- Common data types
- Common land use definitions
- Definition of map and policy purpose

Regional Authority

As it dealt with the agencies scanned in this research, the issue of regional authority towards a regional land use map and associated regional land use plans, where applicable, was approached. Much concern on regional land use policies revolved around devolving local land use authority. To combat such concerns, most regions maintained broad land use policies in the form of regional development goals. These regional development goals looked to provide a generic vision of what is expected of the region as it develops, but does not go into intricate land use and zoning detail that local comprehensive plans would get into.

As to adherence to this regional authority in land use decisions, the results varied depending on legislative mandates. For some regions, such as the scanned regions of Vancouver, Calgary, Minneapolis, Portland, or Chicago, legislative mandate provided enforceable regional authority to develop regional land use maps and plans. Local plans in those cities had to conform to the regional growth plan of the said cities. For other regions, such as San Diego or Sacramento, the regional development plan is abided by voluntarily. Those regions continuously engage their stakeholders to ensure continuous buy-in and adherence to the regional vision.

Data Maintenance Responsibilities

Regarding the issue of data maintenance required of a regional land use map and/or plan, the agency research was inconclusive as to a predominant designation of responsibility. For some regions, data on regional land use was maintained at the local level, for some other areas the state took charge of the data, and for yet some other regions, the regional planning agency took the lead in maintaining the data. Each method has its own benefit for the maintenance entity, whether it is direct local input and update from local decisions, state conformed data, or regional synced data.

Common Data Types

Contrary to how data is maintained across the regions scanned, the majority used the parcel layer as the base layer in classifying land use, with aerial photography used as a validation tool if available. For most US based regions, regional property assessors share common property land use classifications, leading easily into the discussion of defining a common regional land use classification system. For all regions scanned, the parcel information provides information on density, which can be correlated into land use definitions.

Common Land Use Definitions

The challenge in creating a regional land use map across various jurisdictions, is rectifying varying land use definitions. The regional planning agency took the lead in most of the scanned cases to create a common land use classification system. The regional planning agency collected local land use data from comprehensive plans, as well as zoning data from parcel layers, and created an equivalency table of local land use types into common regional categories based on land use function. Any local land use type that did not fit into a prescribed regional land use category was fitted into a developed regional land use category, with consultation with the member locality. If all else fails, a new land use category was created to accommodate the unique land use type.

Definition of Map and Policy Purpose

When it came to the purpose of a regional land use map or policy, most scanned regions had similar grounds for developing their regional initiative. Whether it be legislatively mandated or developed voluntarily, most regions with a regional land use map and/or regional land use policy have done so for the intent of coordinating regional land use decisions across jurisdictional boundaries. The regional land use map and policy have defined purposes for their respective region. For some regions, it's to ensure that local comprehensive plans, local future land use decisions, and other development decisions between localities are consistent and complimentary of each other. For other regions, the regional land use map, data, or policy is plugged into a regional growth forecasting model for future transportation demand, socioeconomic change, or spatial distribution of the region. Regardless of purpose, each region clearly spells out the intent of the effort and gets buy in from their stakeholders.

In the following table, an overview of the scanned regional planning agencies is provided. The table identifies the regional development framework and its associated mandates (voluntary or legislatively mandated) and when the plan was implemented. Furthermore, the table provides an overview of an existence of a regional land use map, and whether it is an existing or future land use map.

Table 1: Overview of Regional Planning Agencies

Regional Planning Agency	Regional Development Framework		Regional Land Use Map	
	Title	Implementation Date	Existing Land Use Map	Future Land Use Map
MAG *(Phoenix, AZ)*	---	---	X	X
SACOG *(Sacramento, CA)*	***Blueprints[1]***	***2004***	---	X
SANDAG *(San Diego, CA)*	***Regional Comp Plan[1]***	***2004***		X
CMAP *(Chicago, IL)*	***GoTo2040[2]***	***2010 (est.)***	---	X
MAPC *(Boston, MA)*	***MetroFuture[3]***	***2008***	X	X
MetC *(Minneapolis, MN)*	***Regional Development Framework[4]***	***2004***	X	X
RRPDC *(Richmond, VA)*	---	---		X
MVRPC *(Dayton, OH)*	***Going Places[3]***	***2011 (est.)***	X	X
Metro *(Portland, OR)*	***Regional Framework Plan[5]***	***1997***	X	X
CRP *(Calgary, AB)*	***Calgary Metropolitan Plan[6]***	***2009***	---	X
Metro Vancouver *(Vancouver, BC)*	***Livable Region Strategic Plan[7]***	***1996***	---	X
COMEC *(Curitiba, Brasil)*	***Integrated Development Plan[3]***	***2006***	X	X

1- ***Initially developed voluntarily, now legislatively mandated by CA Senate Bill 375.***
2- ***Legislatively mandated per Illinois Statutes, Chapter 70, Regional Planning Act .***
3- ***Voluntary Regional Development Framework***
4- ***Legislatively mandated per Minnesota Statutes, Chapter 473: Minnesota Land Planning Act***
5- ***Legislatively mandated per OR Senate Bill 100: Land Conservation and Development Act .***
6- ***Legislatively mandated per Alberta's Land Stewardship Act .***
7- ***Legislatively mandated per British Columbia's Environment and Land Use Act.***

Regional Land Use Map Development

In formulating the regional land use map for the Hampton Roads region, there should be a methodology developed as to the development of the regional land use map; collection of the land use data, integration of the locality land use data into a regional land use data layer, maintenance of the regional land use data, the division of responsibilities for the regional land use map upkeep, and a clearly defined purpose for the region's planning efforts. For the purposes of this section, the technical aspects of developing an existing or future regional land use map will be covered. The defined purpose and intent of this map will be explored in the subsequent section.

General Methodology

To approach the initial development of the regional land use map, there will be several steps within an eventual cycle for this map development and maintenance. The steps that will be involved in developing the regional land use map include:

1. Collecting the existing and/or future land use data and land use definitions from the localities of the Hampton Roads region.
2. Generating a catalog of land use types across localities within the region.
3. Reviewing the catalog of land use types for categorizations of land use by function.
4. Creating a common regional land use classification system with a regional land use code, based on land use function, and any modifications from the regional technical advisory committee.
5. Assigning a code from the common regional land use classification system to each land use type in the regional catalog of land uses.
6. Reviewing the code assignments to locality land uses with the localities.
7. Generate a regional existing and/or future land use map based on the common regional land uses and recoded locality land use data into regional land use categories.

Data Collection

Generating the regional land use map will involve cooperation with the member localities in providing land use data. With the localities approaching land use in various ways, a set of data needs to be identified for the localities to provide. The most common data available across all localities in some form is zoning data from parcel layers. With this data set maintained often by locality property appraisers and planning departments, this parcel layer with zoning information will be of best use to piece together a regional land use map. Local current and future land use maps/datasets will be helpful from the locality if it does exist. This land use map/datasets would be used to supplement and double check the categorization of the locality's zoning into a regional land use type.

Data Integration

Upon completion of the data collection process, the next step in developing the regional land use map will encompass getting varying land use and zoning definitions to line up to each other. Without reviewing the actual Hampton Roads land use and zoning data from each locality, it can be assumed that there will be variances in definitions and approach. A dialogue with the locality, especially those staff members who develop and maintain the data, will be crucial for the success of integrating the land use data. The regional planning agency staff has to take stock as to the general methodology behind the locality's land use/zoning system. Is the system based on land use function? Is the system based on density? Is the system based on another metric of land use? From garnering that understanding of the locality's land use system, the data can be better understood when equivalency regional land use types are assigned, as well as developing the regional land use types. There should be some documentation with each regional land use classification of local land uses, so the equivalency is understood between regional planning and local planning staff in future iterations of the regional land use map.

Data Management

A very critical piece in the development of the regional land use map, is the long term maintenance of the data, map, and who will be charged with such responsibility. Subsequent to the creation of the land use map in FY 2011, the benefits and success of the map will be assessed and potential ongoing maintenance of the map will be discussed with the localities.

The details associated with maintaining a regional land use map are numerous. Among the topics to be considered are update of changes to land use types, creation of a framework and schedule for receipt of changes from the localities, and maintaining a consistent conversion of local land use classifications for the region.

Implementation of the Regional Land Use Map

In developing the regional land use map, there are various technical aspects to consider, covered in the earlier section. The other aspect in developing a regional land use map is its purpose. What use will the regional land use map serve for the region? Per the FY 2010 Unified Planning Work Program, the regional land use map for Hampton Roads will serve as a tool for long range transportation planning, transit planning, and other planning efforts requiring land use information. The vision for this project laid out broad uses for the regional land use map. What needs to be explored further would be how this regional land use map will be used in the long range transportation plan, transit planning, and other regional planning efforts. The following covers possible, but not exclusive, defined purposes of the regional land use map.

Regional Land Use Map and the Region's LRTP

For the purposes of the long range transportation plan (LRTP), the regional land use map could be a valuable resource for all landuse-related measures in the project prioritization process being developed. Given the timeframe for the project prioritization process and 2034 LRTP schedule, it is expected that the regional land use map will prove most valuable for the following iteration of the region's LRTP. Within the prioritization process, there is a project utility criteria dealing with land use compatibility. The criterion asks if the project is compatible with existing land use patterns and future plans/development. Localities will be able to state whether a project is documented within their local comprehensive plan or relevant future plan. Furthermore, localities can compare project compatibility with existing/future land uses in their locality. With the development of a regional land use map, the evaluation of this prioritization criterion can be done with a uniform regional land use map, allowing an objective determination whether a candidate project is compatible with existing/future land uses.

Regional Land Use Map and Local Comprehensive Plans

Most other regions that employ a regional land use map, use the map to ensure consistency across localities. The regional land use map can be used as a tool by localities. When a locality develops a local comprehensive plan, they can be cognizant of neighboring land uses outside their jurisdictional boundaries.

Regional Land Use Map and Multi-modal Passenger Transportation Planning

Multi-modal Passenger Transportation Planning is heavily dependent on knowing where future growth is expected to occur across their service area, in order to plan, develop, construct, and operate future passenger transportation service into those emerging growth areas. With the development of a regional land use map, multi-modal passenger transportation planners can be cognizant of regional land use and development plans in a consistent, common definition. From such common definition, future multi-modal

passenger transportation services can better reach future growth areas, as well as maximize ridership potential.

Regional Land Use Map and Non-motorized Transportation Planning

Local land use maps play a key part in developing non-motorized modes of transportation (i.e. bicycle and pedestrian users). With most modes covered in this category spanning a short distance, land use becomes crucial in determining where to place facilities to support these modes of transportation. Expanding planning onto a regional scale, the regional land use map bridges the land use analysis that most localities have in developing non-motorized transportation infrastructure across neighboring localities, in order to better provide for non-motorized transportation infrastructure for development areas straddling jurisdictional boundaries.

Regional Land Use Map and Freight Transportation Planning

Planning for freight transportation requires thinking to occur regionally. For the freight industry, business is conducted on a regional market level, and expects to access that regional market in a consistent manner. A regional land use map assists freight planning efforts, by denoting industrial, freight, and distribution center land uses across the region via a common definition. From this, freight planners can work with economic development planners to denote industrial growth areas and developing an accessibility plan to those industrial growth areas, as well as an efficient way to access regions beyond that of Hampton Roads.

Next Steps

The report has provided a snapshot of regional land use mapping and policy making efforts from various US and International regional planning agencies. It also covered a potential methodology in developing, maintaining, and defining a purpose for the regional land use map. Going forward, in FY 2011, the HRTPO staff will seek to implement the development methodology of a regional land use map. The end product will be Hampton Roads' first regional land use map, a valuable resource for a variety of planning activities.

In tandem to the development of a regional land use map, the region has started to explore the development of a regional development framework. The regional land use map, upon completion, provides a tool that the Hampton Roads region can use, but does not oblige the region voluntarily, nor legislatively to use it. In this regard, the regional land use map can only go so far in coordinating land use decisions across localities. Because of the growing challenges of regional development and its impact on the regional economy and quality of life, it would be prudent for the Hampton Roads region to look to develop some regional development goals and guidelines that support the intent of coordinated regional development.

In the Spring of 2010, the technical advisory committees of the Hampton Roads Planning District Commission (HRPDC) and Hampton Roads Transportation Planning Organization (HRTPO) were briefed on a staff proposal to embark on the development of a regional development framework. This proposal, stimulated by the US Department of Housing and Urban Development's (HUD's) Sustainable Communities Planning Grant Program, looks to fill a regional need for coordinated regional development, and further the HRPDC and HRTPO involvement with State and Federal policies, goals, and guidelines for coordinated regional land use and transportation decisions. With the approval of the HRPDC Policy Board in May 2010, the HRPDC staff will be developing a proposal for the development of the regional development framework for submission to HUD. The topic of sustainable regional development has become prominent, and efforts at the HRTPO and the HRPDC will assist with regional discussions in Hampton Roads.

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