REGIONAL CONNECTORS STUDY

Scenario Planning Update #2

March 15, 2019

Michael Baker INTERNATIONAL

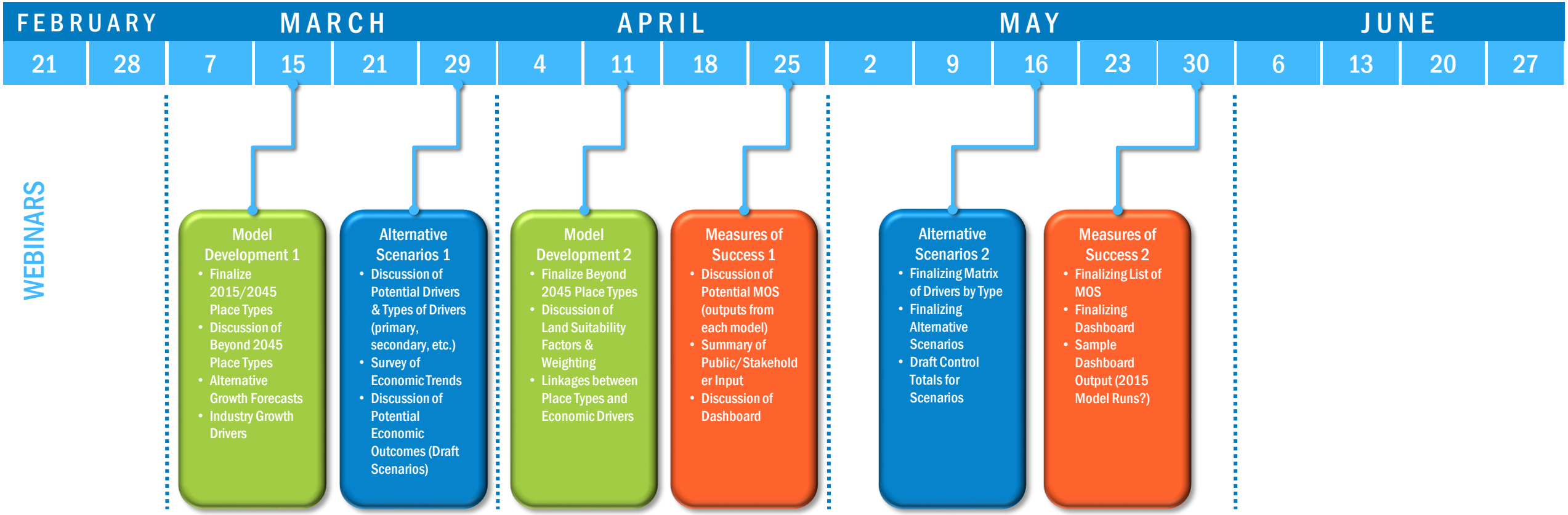
Scenario Planning Schedule

Schedule

Task No	Task	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	2020 JAN
TASK 4	CONDUCT SCENARIO PLANNING													
4.1	Building the Base Data, Models, and Scenarios													
4.2	Defining Alternative Future Scenarios													
4.3	Defining Measures of Success													
4.4	Evaluate 2015 Current Regional Conditions													
4.5	Modeling the 2045 Baseline Alternative													

- Draft Deliverables
- Final Deliverables
- Steering Committee Meetings and Presentations
- Working Group Coordination Meeting
- HRTPO to approve updated Prioritization Tool
- 2015 Regional Travel Demand Model available
- 2045 Regional Travel Demand Model available

REGIONAL CONNECTORS STUDY – INITIAL DRAFT SCHEDULE OF WORKING GROUP WEBINARS



Dates and topics subject to change

REGIONAL CONNECTORS STUDY

- **Task 4.1 Update – LAND USE COMPONENTS of Building the Base Data, Models, and Scenarios**

Task 4.1c: Build Place Types

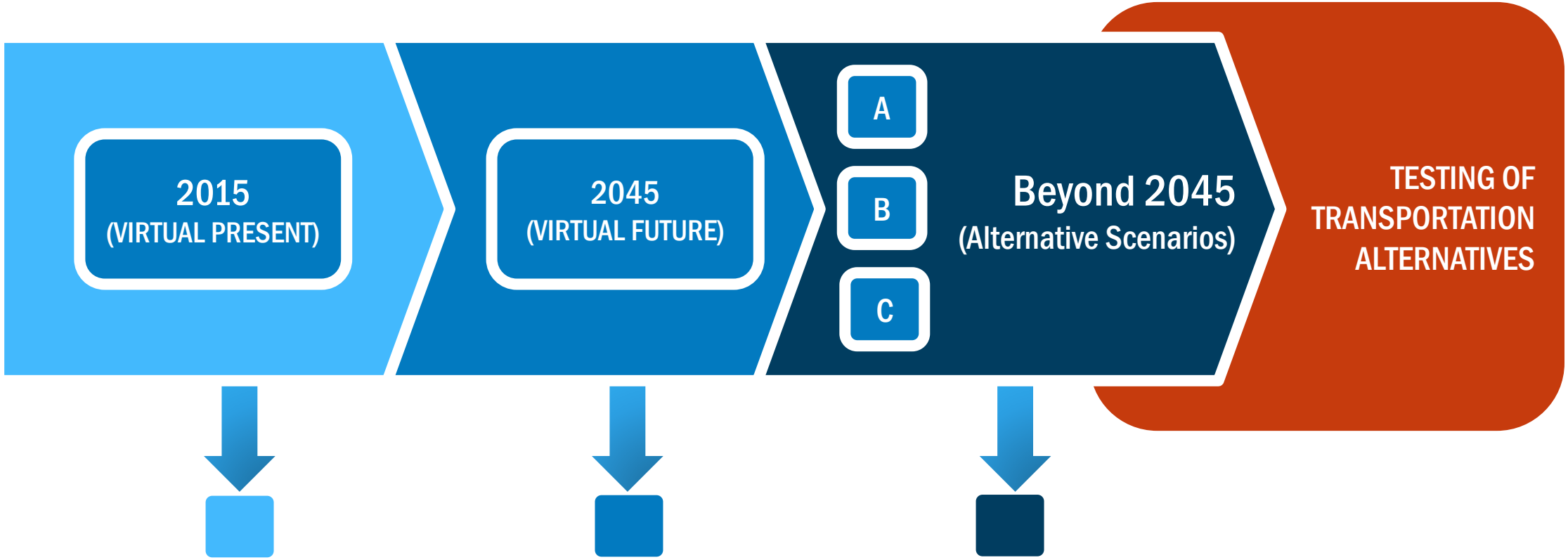
Task Summary:

1. Profile existing and future land use types in the region to develop a **unified set of Place Types** that describe regional development patterns
2. Develop **quantitative summaries** of each Place type that summarize land uses, developed areas, and environmental data for each
3. Develop **summary visualizations** of each Place type, to clearly explain them to stakeholders and the public

HRTPO

REGIONAL CONNECTORS STUDY

LAND USE MODELING IN THIS STUDY:



PLACE TYPE DEVELOPMENT

PART 1:
2015 (EXISTING) AND 2045 (FUTURE) PLACE TYPES

- Develop 2015 & 2045 Place Types
- Determine "Typical" Place Type Densities
- Allocate Place Types on the Regional Map
- Calibrate population/employment to TAZ Control Totals
- Run the Land Use Model for 2015 & 2045

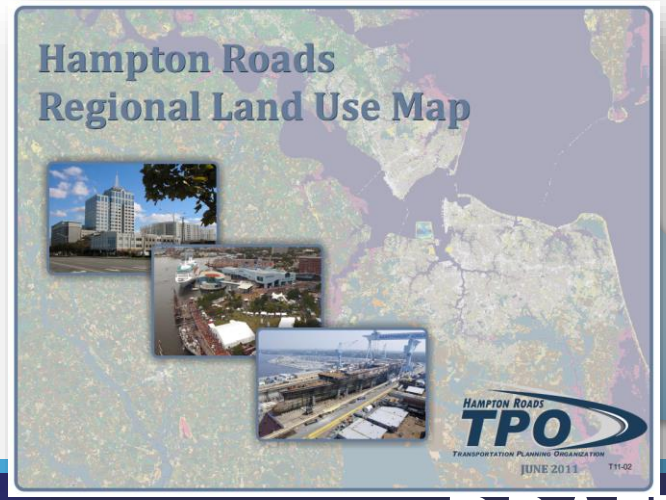
PART 2:
BEYOND 2045 PLACE TYPES

- Develop Draft Beyond 2045 Place Types
- Correlate Place Types to Beyond 2045 Scenarios
- Allocate Place Types according to Scenarios
- Run the Land Use Model for Beyond 2045 Scenarios
- Output data to Travel Demand Model

PART 1:
2015 (EXISTING) AND
2045 (FUTURE) PLACE TYPES

USING THE HRTPO REGIONAL LAND USE MAP AS THE BASIS FOR 2015 & 2045 PLACE TYPES:

- Methodology **approved by the HRTPO Board** & coordinated with **localities' staff**
- Developed an accepted methodology for **"the merging of 16 local comprehensive plans and existing land uses."**
- **Key tool** for inter-local and regional planning



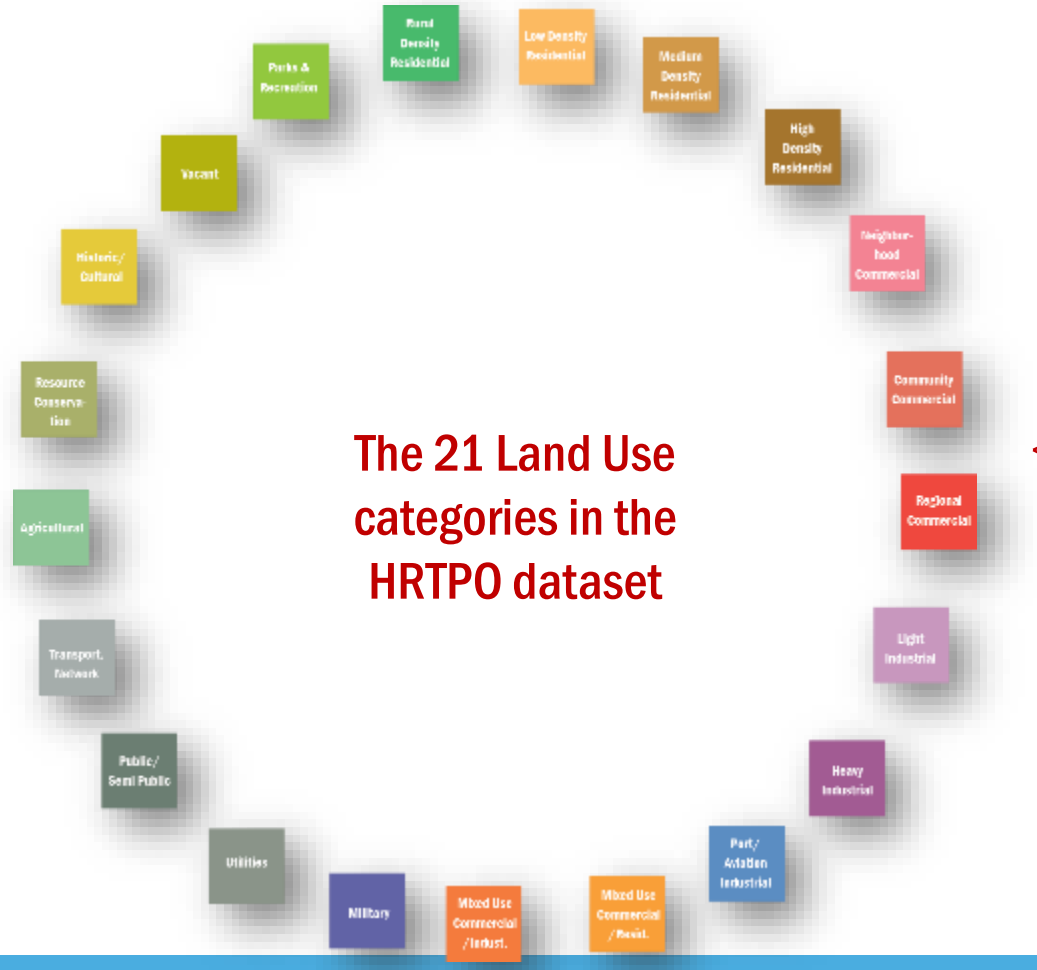
Basic Categories

Detailed Categories

DRAFT

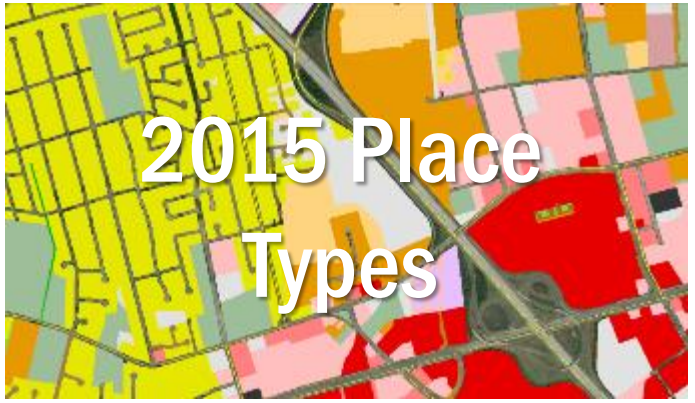
THE 2015 & 2045 PLACE TYPES

Use the HRTPO Regional Land Uses for the 2015 (existing) and 2045 (future) place types



The 21 Land Use categories in the HRTPO dataset

Become the Place Types used for the Virtual Present & Virtual Future modeling

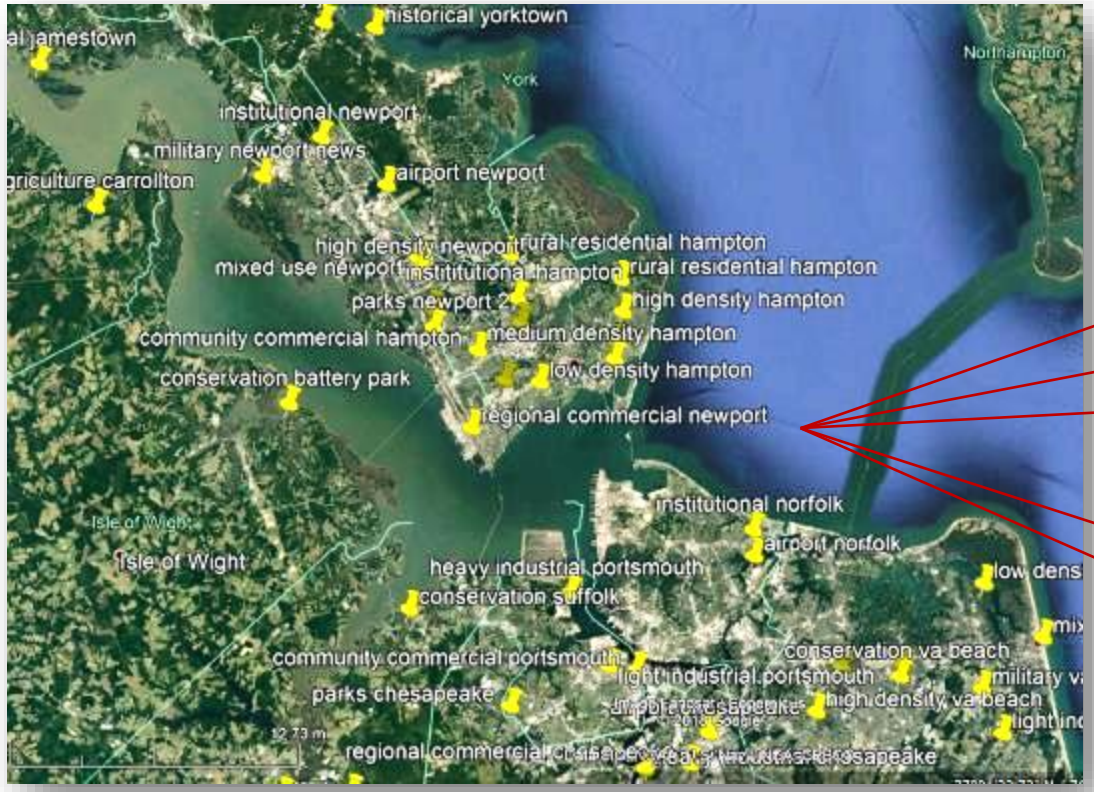


Existing Land Use from HRTPO Dataset

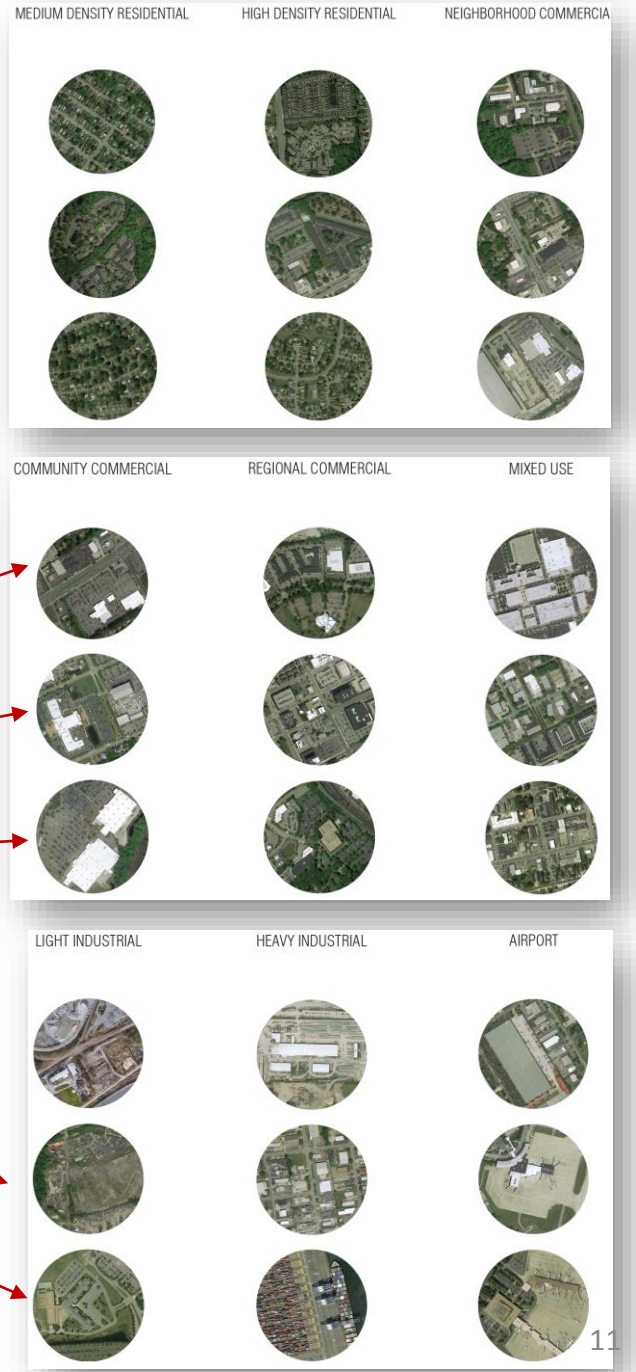
Future Land Use from HRTPO Dataset

QUANTIFYING PLACE TYPES

Each Place Type was sampled with multiple locations to determine the average/typical population & employment data for each



For each Land Use, sample multiple locations



EXAMPLE

LOCAL COMMERCIAL PLACE TYPE

- 0 People/acre
- 4.9 Jobs/acre
- 0.2 Typical FAR
  - 20% Building footprint
  - 60% Parking
  - 20% Open Space

Local Commercial

DRAFT Place Types for Regional Connectors Study

March 7, 2019

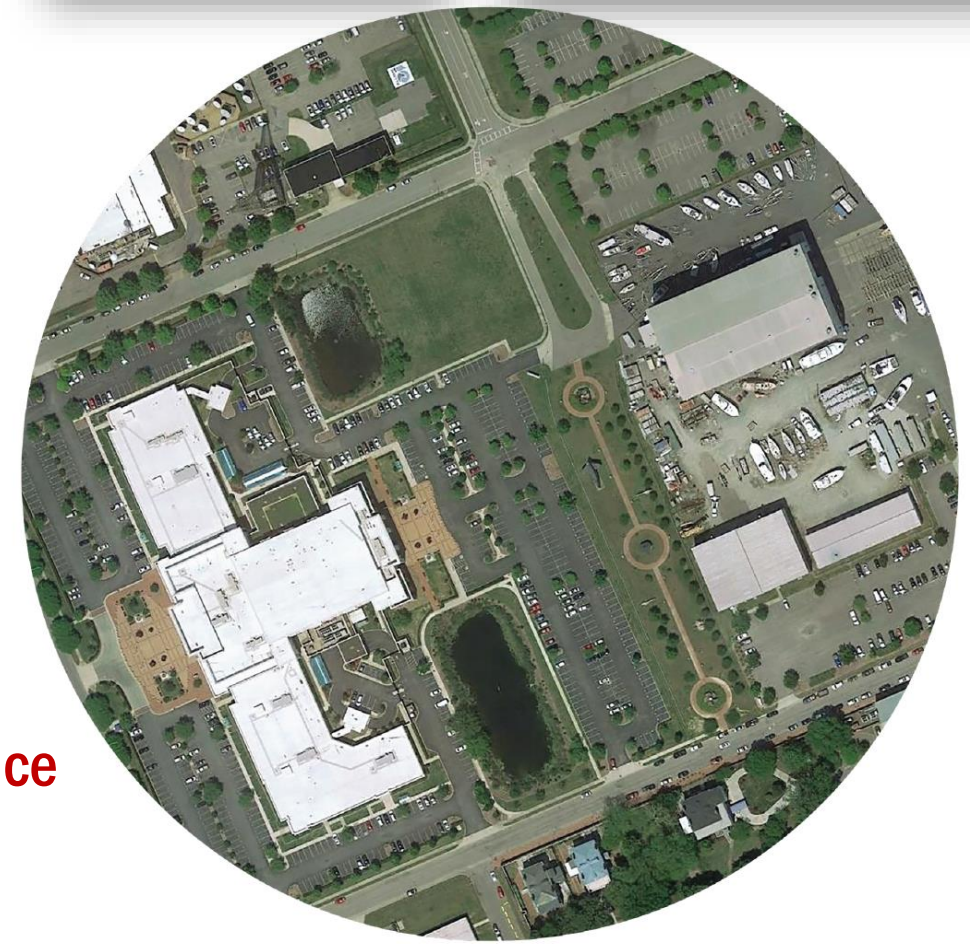
Part 1. Place Types for 2015 Virtual Present and 2045 Virtual Future[1]

Code and Name[2]	Examples	DU/Acre Range	FAR Range	People / Acre[3]	Jobs / Acre	Description
RR Rural Residential		0.1–.9	-	0.4-3	0	Very large lot single family homes in a rural context interspersed with some agricultural uses
RLD Low Density Residential		1-3	-	4-10	0	Large lot single family homes in a low-density suburban context
RMD Medium Density Residential		4-12	-	10-36	0	Attached homes and small lot single family homes in a moderate density suburban or urban context
RHD High Density Residential		13+	-	37+	0	Multifamily apartments and condominiums in a high density urban or suburban context
CN Neighborhood Commercial		-	.1-.3	-	5-10	Limited scale shopping, business, or trade activity
CL Local Commercial		-	.1-.3	-	11-20	Inter-neighborhood shopping, business, or trade activity
CR Regional Commercial		-	.4+	-	21+	Regional shopping, business, or trade activity
IL Light Industrial		-	.05-.3	-	7-15	Light industrial uses (Research & Development, warehousing, service, etc.)
IH Heavy Industrial		-	.05-.3	-	15+	Heavy industrial uses with possible adverse environmental impacts (manufacturing, etc.)
IPA Port/Aviation Industrial		N/A	N/A	N/A	N/A	Port, General and Commercial Aviation related industrial operations
MCH Mixed Use Comm/Res		4+	0.6+	10+	20+	Commercial/ residential mixed use activity
MCI Mixed Use Comm/Ind		5+	0.6+	12+	30+	Commercial/ industrial mixed use activity
MM Military		N/A	N/A	N/A	N/A	Military-related facilities
U Utilities		-	-	-	1-3	Utility facilities
P Public/ Semi-Public		-	-	5-10	30-60	Government/ Educational/ Religious/ Social or healthcare facilities
T Transportation Network		-	-	-	-	Transportation facilities
AA Agriculture		.01-.1	-	.03-.3	.03-.3	Agricultural operations
V Vacant		-	-	-	-	Vacant developable lands
NP Parks and Recreation		-	-	-	-	Open space and recreational uses
NC Resource Conservation		-	-	-	-	Conservation lands
NH Historic/ Cultural		-	0.1+	3-5	6-12	Historic Preservation / Cultural uses

[1] These are the existing and future land uses defined in the Hampton Roads Regional Land Use Map document from HRPDC.
[2] Note that all Place Types for the 2015 Virtual Present and 2045 Future are assumed to be single land uses (except for the Mixed Use ones) and 1-acre in size.
[3] Population and employment density/intensities were developed by sampling place types in localities throughout the region and averaging the results

DRAFT

← Results of the Sampling are summarized in the Draft Place Type matrix

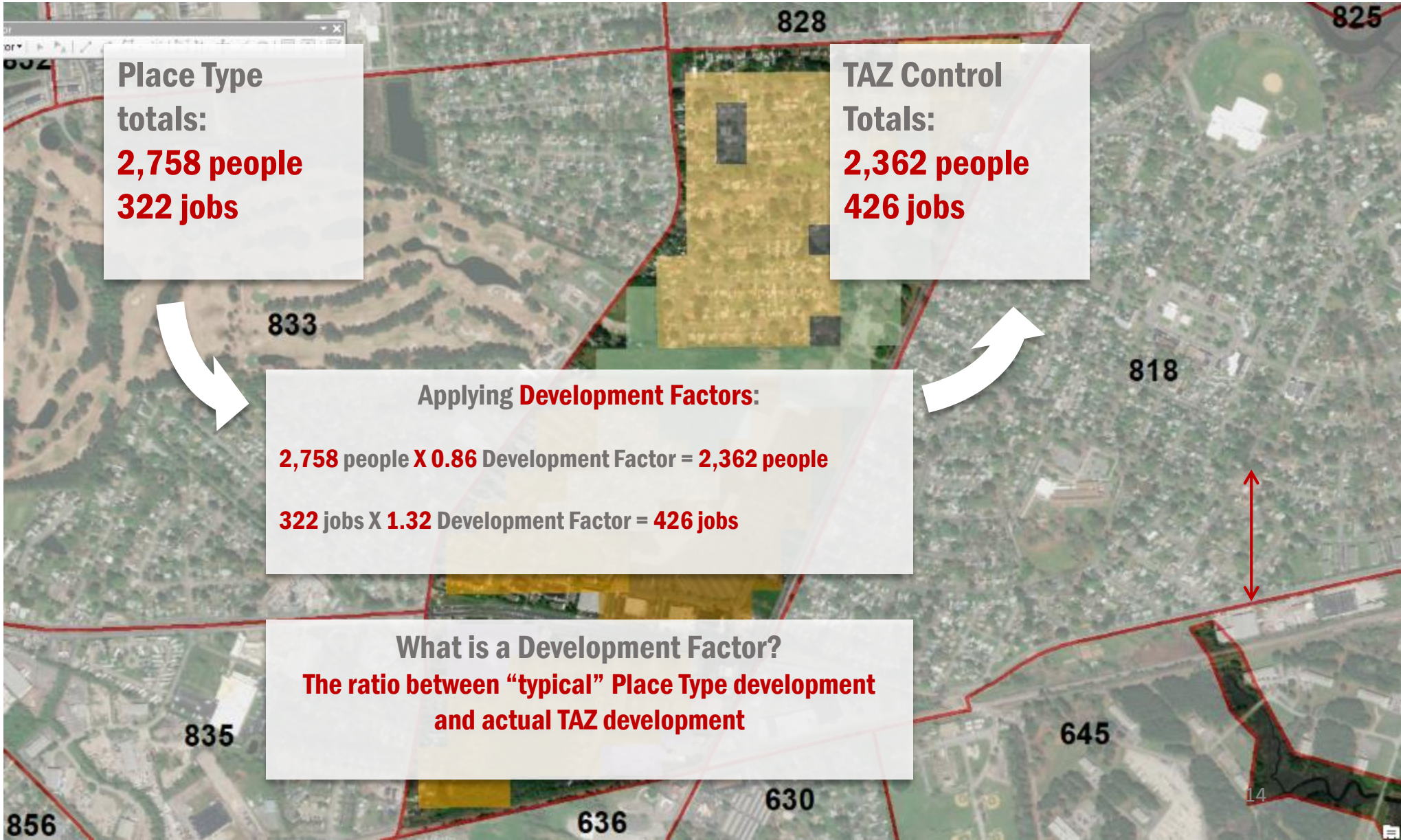


Allocating PLACE TYPES

Applying **Jobs & Population** totals for each Place Type

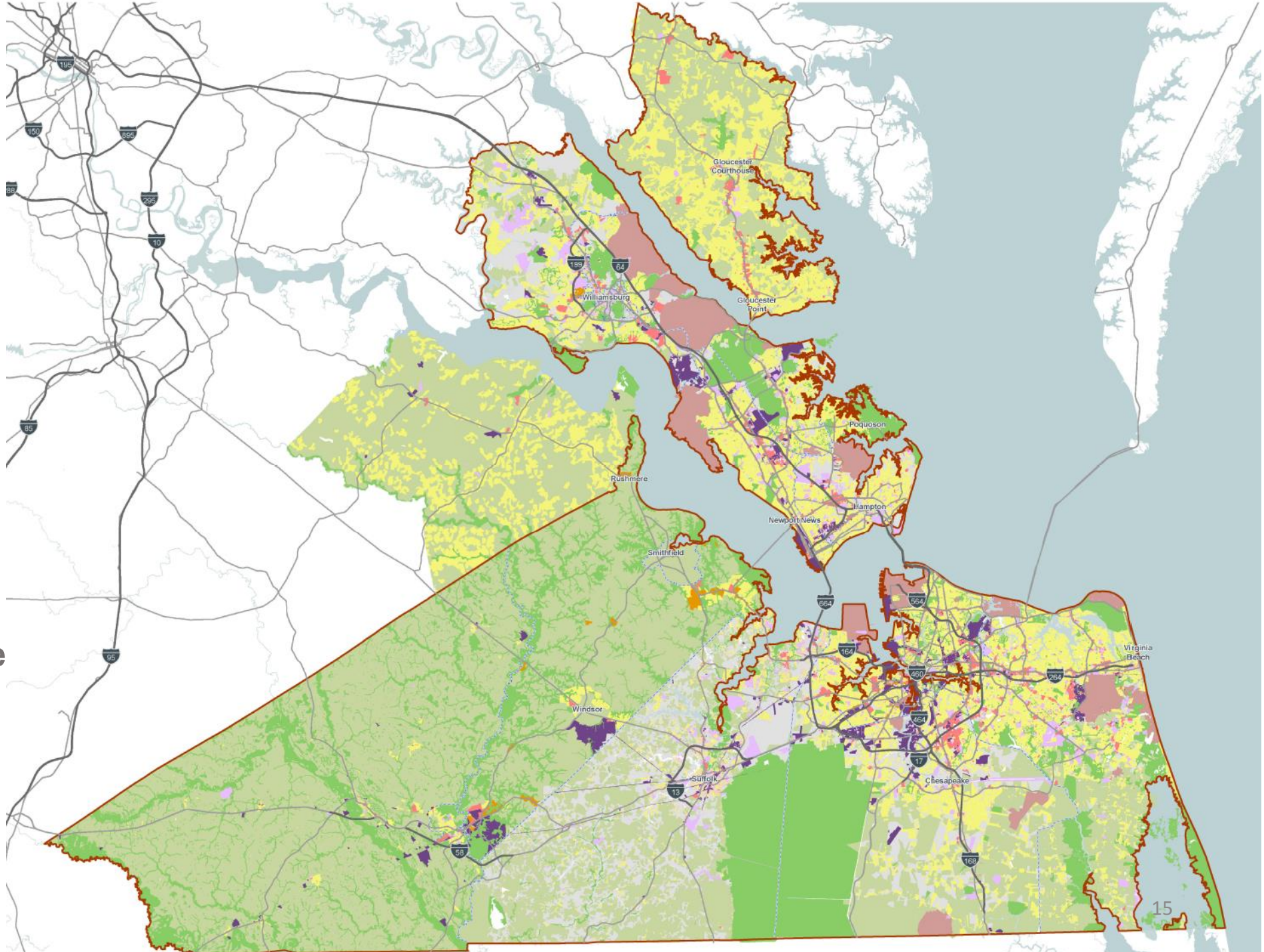
Allocating PLACE TYPES

Reconciling Place Type allocation with TAZ Control Totals



RESULT

- 2015 “Virtual Present” map of the Region
- 2045 “Virtual Future” map of the Region
- With quantified Land Uses reconciled to the TAZ control totals for the Regional Travel Demand Model



Discussion

- Affirm basic Approach for 2015 & 2045 Place Types & Allocations

- Opportunities for using these for Local as well as regional Planning efforts?

2015 & 2045 PLACE TYPES

1. RESIDENTIAL

Code and Name[2]		Examples		DU/Acre Range[3]	FAR Range	People / Acre	Jobs / Acre	Description
RR	Rural Residential			0.1-.9	-	0.4-3	0	Very large lot single family homes in a rural context interspersed with some agricultural uses
RLD	Low Density Residential			1-3	-	4-10	0	Large lot single family homes in a low-density suburban context
RMD	Medium Density Residential			4-12	-	10-36	0	Attached homes and small lot single family homes in a moderate density suburban or urban context
RHD	High Density Residential			13+	-	37+	0	Multifamily apartments and condominiums in a high density urban or suburban context

2. COMMERCIAL

Code and Name[2]		Examples		DU/Acre Range[3]	FAR Range	People / Acre	Jobs / Acre	Description
CN	Neighborhood Commercial			-	.1-.3	-	5-10	Limited scale shopping, business, or trade activity
CL	Local Commercial			-	.1-.3	-	11-20	Inter-neighborhood shopping, business, or trade activity
CR	Regional Commercial			-	.4+	-	21+	Regional shopping, business, or trade activity

3. INDUSTRIAL

Code and Name[2]		Examples		DU/Acre Range[3]	FAR Range	People / Acre	Jobs / Acre	Description
IL	Light Industrial			-	.05-.3	-	7-15	Light industrial uses (Research & Development, warehousing, service, etc.)
IH	Heavy Industrial			-	.05-.8	-	15+	Heavy industrial uses with possible adverse environmental impacts (manufacturing, etc.)
IPA	Port/Aviation Industrial			N/A	N/A	N/A	N/A	Port, General and Commercial Aviation related industrial operations

4. MIXED USE

Code and Name[2]		Examples	DU/Acre Range[3]	FAR Range	People / Acre	Jobs / Acre	Description
MCR	Mixed Use Comm/Res	 	4+	0.6+	10+	20+	Commercial/ residential mixed use activity
MCI	Mixed Use Comm/Ind	 	5+	0.6+	12+	30+	Commercial/ industrial mixed use activity

5. MISCELLANEOUS

Code and Name[2]		Examples		DU/Acre Range[3]	FAR Range	People / Acre	Jobs / Acre	Description
MM	Military			N/A	N/A	N/A	N/A	Military related facilities
IU	Utilities			-	-	-	1-3	Utility facilities
IP	Public/Semi-Public			-	0.1+	5-10	30-60	Government/Educational/Religious/Social or healthcare facilities
IT	Transportation Network			-	-	-	-	Transportation facilities

6. MISCELLANEOUS

Code and Name[2]		Examples		DU/Acre Range[3]	FAR Range	People / Acre	Jobs / Acre	Description
AA	Agriculture			.01-.1	-	.03-.3	.03-.3	Agricultural operations
V	Vacant			-	-	-	-	Vacant developable lands
NP	Parks and Recreation			-	-	-	-	Open space and recreational uses
NC	Resource Conservation			-	-	-	-	Conservation lands
NH	Historic/ Cultural			-	0.1+	3-5	6-12	Historic Preservation / Cultural uses

PART 2:
BEYOND 2045 PLACE TYPES







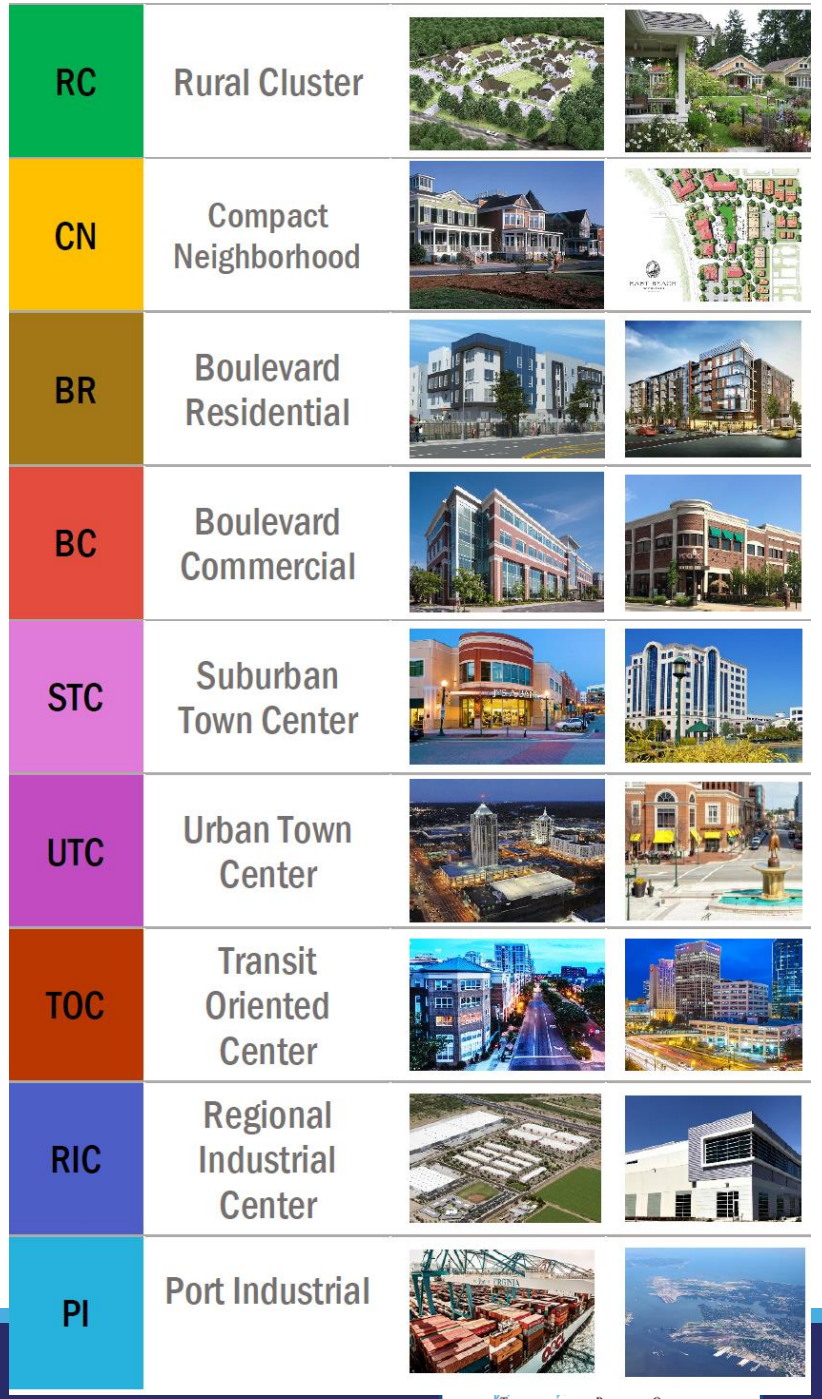


DEVELOPING PLACE TYPES FOR BEYOND 2045 SCENARIOS:

- These will be used to allocate growth **in addition to the 2045 Baseline**
- We can **still use the same 21** HRTPO Land Use categories to allocate growth beyond 2045
- However, we need some **additional Place Types** to reflect **potential new community types** in the Beyond 2045 Scenarios

BEYOND 2045 PLACE TYPES

- Series of 9 new Place Types that represent potential future Community Types
- Account for some potential future trends, including:
  - Economic diversification
  - Market trends
  - Aging population
  - E-Retail
  - Walkable mixed use & transit
  - Automatic Vehicles
  - Industrial concentrations
- These are DRAFT and may be modified to fit the economic conditions in the Alternative Scenarios



NEW PLACE TYPES :

Each new Place Type is a composite of multiple uses on a 9-100 acre typical site

STC-
SUBURBAN
TOWN
CENTER

Place Type

49 ac. Mixed Use
Community

BEYOND 2045 PLACE TYPES

1. MIXED DENSITY RESIDENTIAL

Code and Name		Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
RC	Rural Cluster	 	25 ac.	.1-.5	-	.3-1.3	0-.1	Small cluster housing development surrounded by undeveloped rural lands

RC	Rural Cluster	Belmont Drive, Toano	

Code and Name		Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
CN	Compact Neighborhood	 	16 ac.	3-5	.1-.3	8-13	0-.3	Mixed housing neighborhood with small lot singles and attached housing around community amenities

CN	Compact Neighborhood	East Beach, Norfolk	

2. BOULEVARD MIXED USE

Code and Name		Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
BR	Boulevard Residential	 	9 ac.	15-30	.3-1.0	40-80	5-20	High density multifamily developments along major arterials designed to front on walkable streetscapes
BR	Boulevard Residential	Jefferson Estates, Jefferson Ave. Newport News						

Code and Name		Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
BC	Boulevard Commercial	 	9 ac.	-	.3-2.0	-	14-90	Mixed retail, office and mixed use along major arterials designed to front on walkable streetscapes
BC	Boulevard Commercial	Columbus St.& Constitution Dr. Virginia Beach						

3. URBAN/SUBURBAN TOWN CENTERS &TOD

Code and Name	Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
STC	Suburban Town Center  	49 ac.	15-30	.3-2.0	40-80	14-90	High density walkable mixed-use center in a suburban context
STC	Suburban Town Center	Oyster Point City Center, Newport News 					
UTC	Urban Town Center  	49 ac.	20+	.4+	30+	50+	Very high density walkable mixed-use center in an urban context
UTC	Urban Town Center	Virginia Beach Town Center 					
TOC	Transit Oriented Center  	25 ac.	40+	1.0+	100+	100+	High density mixed use urban center with walkable access to premium transit station
TOC	Transit Oriented Center	Downtown Norfolk 					

4. INDUSTRIAL

Code and Name		Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
RIC	Regional Industrial Center	 	100 ac.	-	.1-.4	-	5+	Large site industrial center with regional market

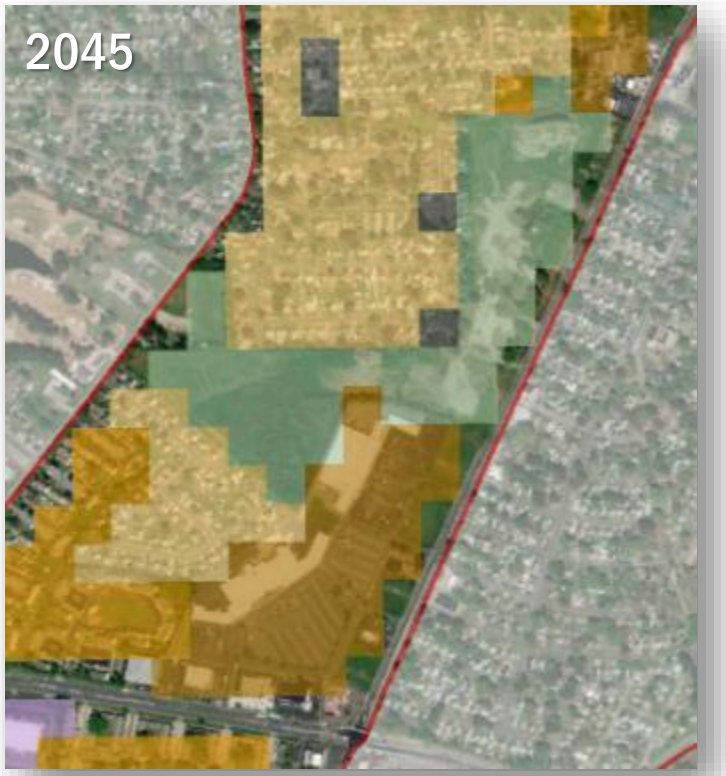
Code and Name		Examples	
RIC	Regional Industrial Center	Newport News Shipbuilding	

Code and Name		Examples	Size[6]	DU/Acre	FAR	People / Acre	Jobs / Acre	Description
PI	Port Industrial	 	100 ac.	-	.1-.3	-	5+	Port related industrial development

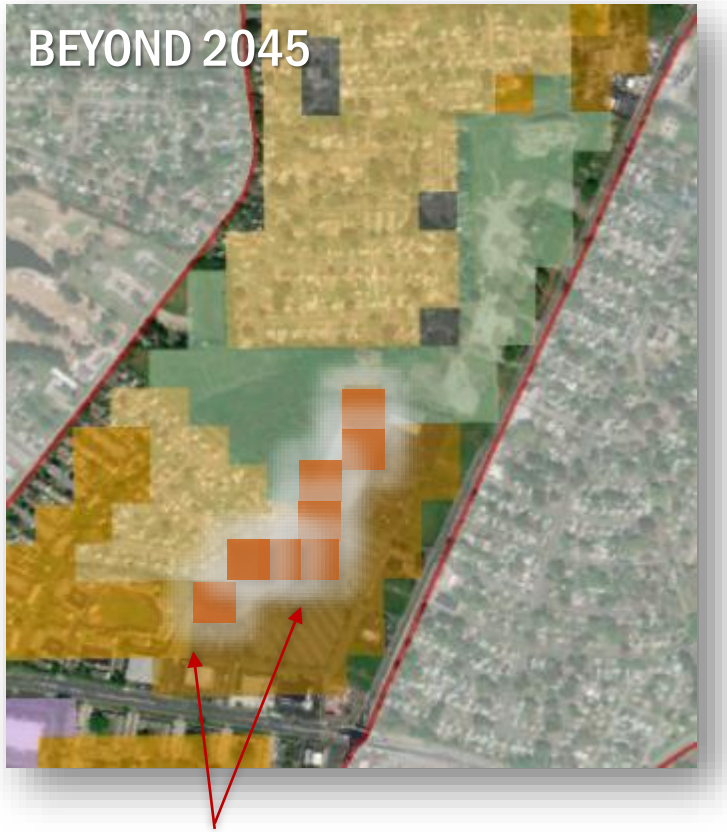
Code and Name		Examples	
PI	Port Industrial	Port of Virginia, Norfolk	

ALLOCATING NEW PLACE TYPES :

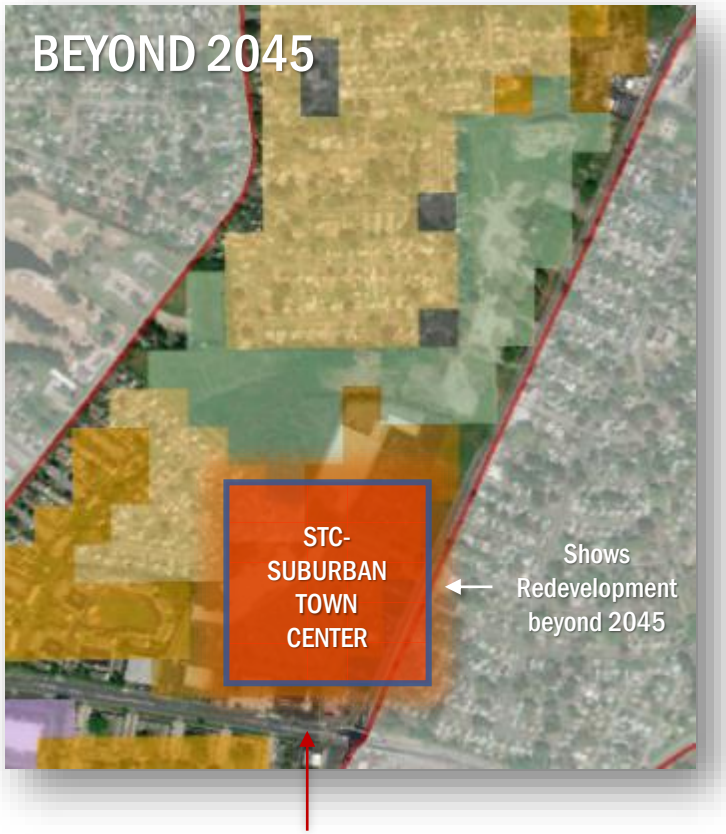
- New growth can be allocated as **Greenfield** (vacant land) development, **Infill** development or **Redevelopment**
- We can use either the HRTPO **2015/2045 Place Types** or the **New (Beyond 2045) Place Types** to allocate new growth



Place Types allocated in 1-ac. grid cells for 2015 & 2045 Land Uses



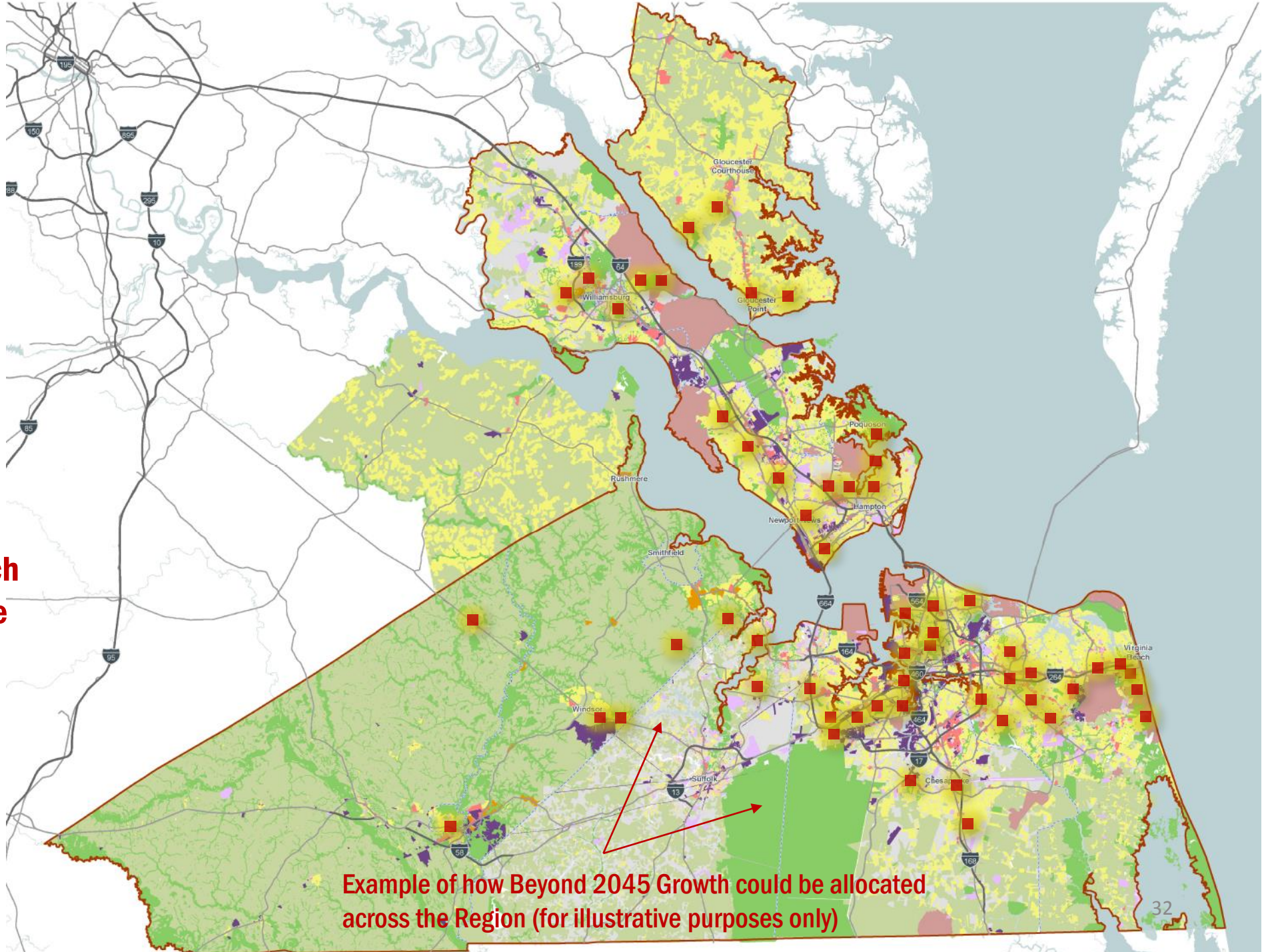
2015/2045 Place Types allocated as Infill Development



New Place Type allocated as Redevelopment

RESULT

- Beyond 2045 Growth allocations using **a combination of Place Types**
- Place Types and spatial allocation of growth will be **tailored to match each Beyond 2045 Alternative Scenario**



Example of how Beyond 2045 Growth could be allocated across the Region (for illustrative purposes only)

Discussion

- Pros/cons of initial "Beyond 2045" Place Type approach (i.e. as mixed-use complete communities/neighborhoods)?
- Recognition that they may be modified to suit the Beyond 2045 Alternatives in next step
- Are there other important trends or issues we need to capture in these Place Types?

REGIONAL CONNECTORS STUDY

Task 4.1 Update – Economic Components of Building the Base Data, Models, and Scenarios

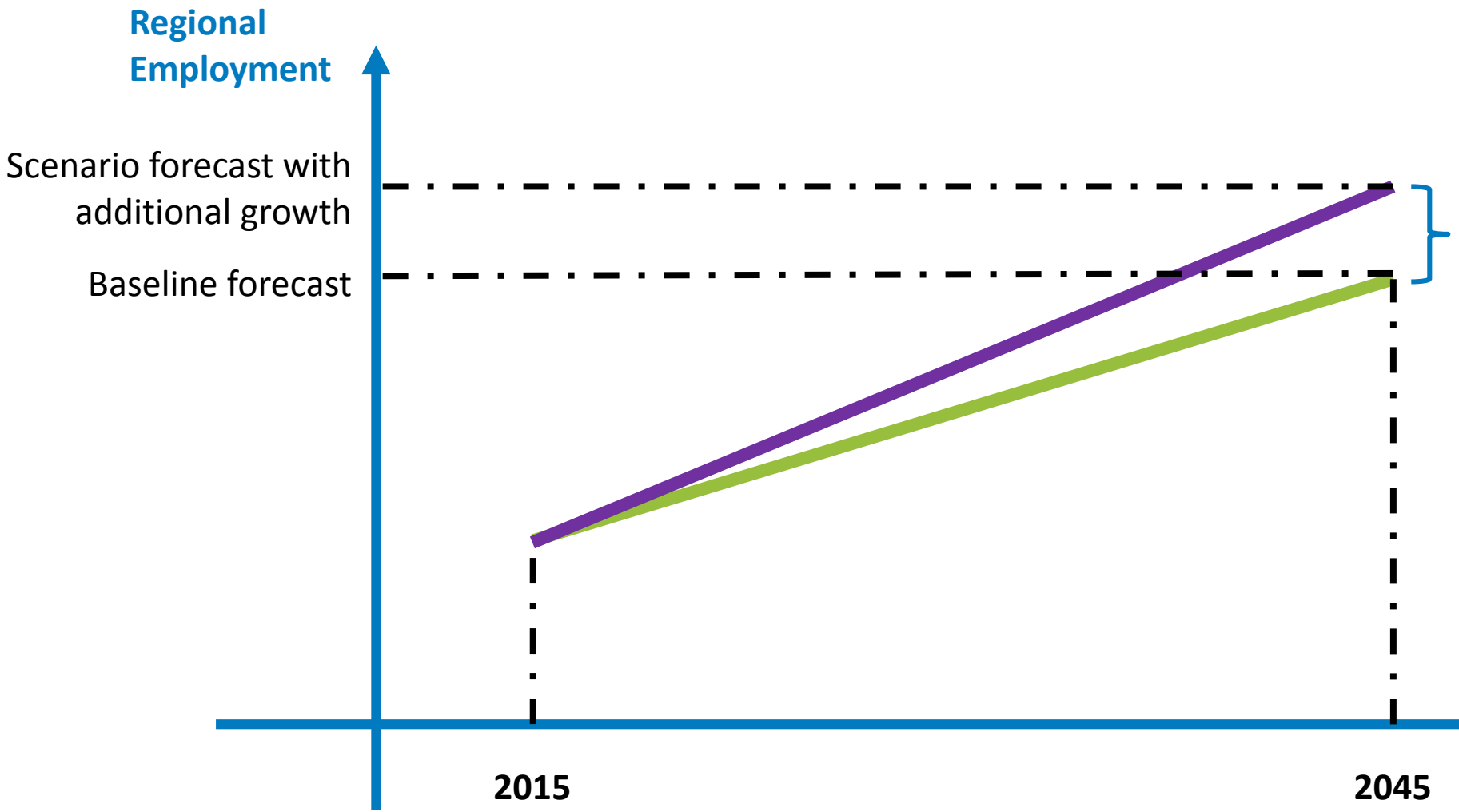
March 15, 2019

Economic Objectives – Task 4.1

Research to support development of economic "drivers" for use in scenario planning:

1. **Baseline:** Understand TPO's current and forecast economic conditions – *establish baseline conditions from which alternative scenarios will pivot*
2. **Scenarios:** Identify economic risks & opportunities that may affect patterns of long term regional growth – *identify building blocks of alternative scenarios*

Economic Objectives – Task 4.1



Key questions:

- How much additional growth is plausible?
- What might the composition of that growth be?

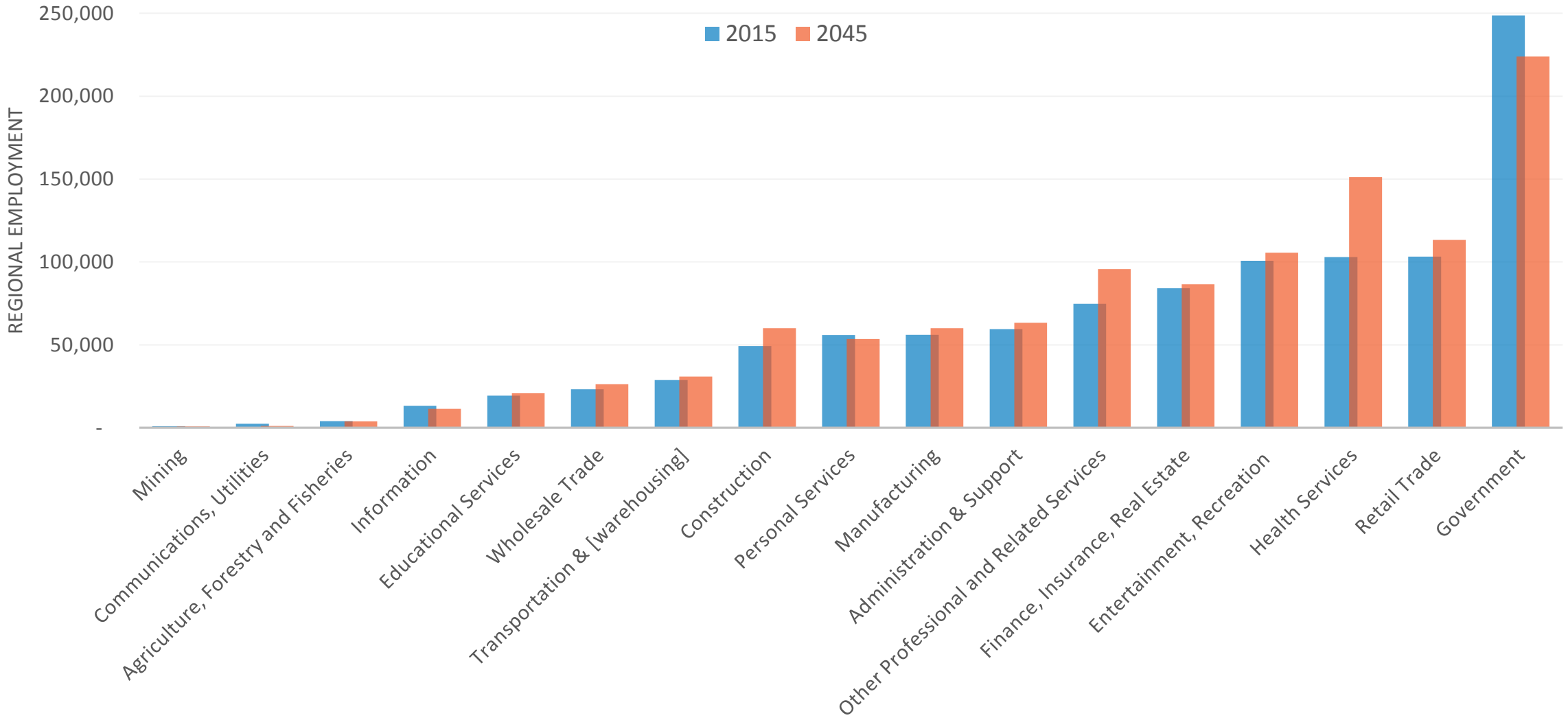
Economic Objectives – Task 4.1

1. Understand TPO's current and forecast economic conditions
   - Industry drivers of growth
   - Benchmarking forecasts
   - *Discussion:* Forecasts
2. Identify economic risks & opportunities
   - Industry targets/opportunities
   - *Discussion:* relevance to scenario definition

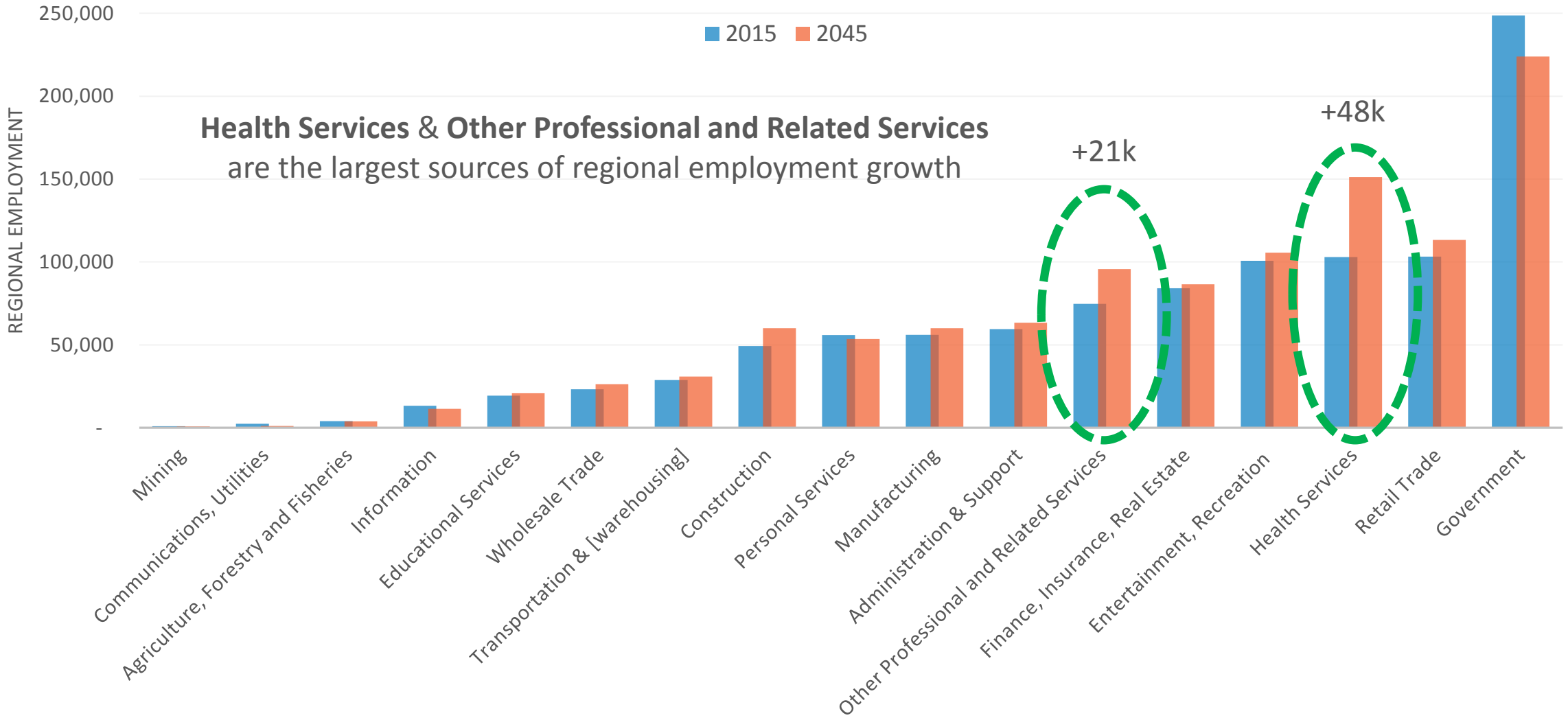
Industry Drivers of Growth

UNDERSTAND TPO'S CURRENT AND FORECAST FUTURE ECONOMIC CONDITIONS

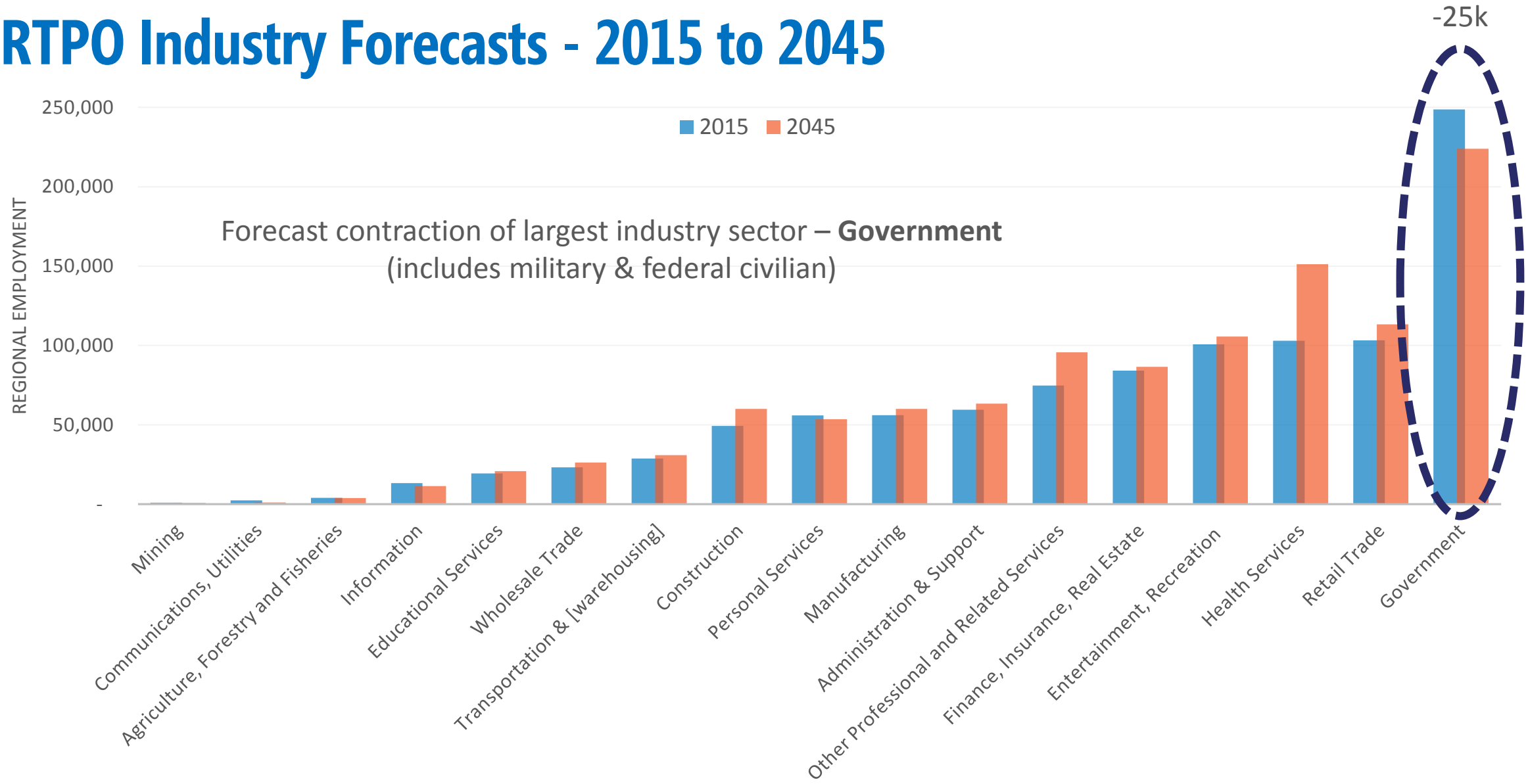
HRTPO Industry Forecasts - 2015 to 2045



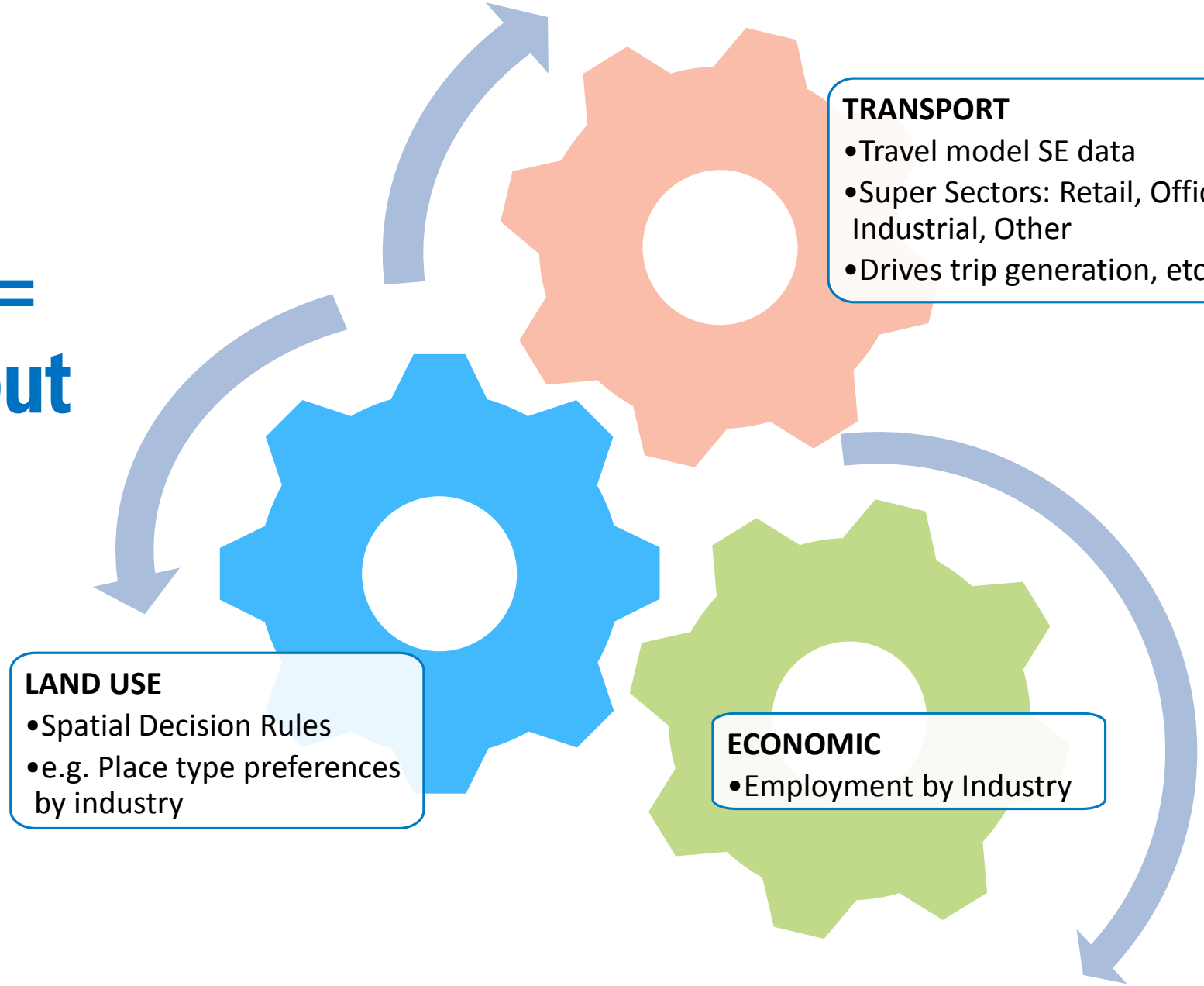
HRTPO Industry Forecasts - 2015 to 2045



HRTPO Industry Forecasts - 2015 to 2045



Industry Forecasts = Model Input



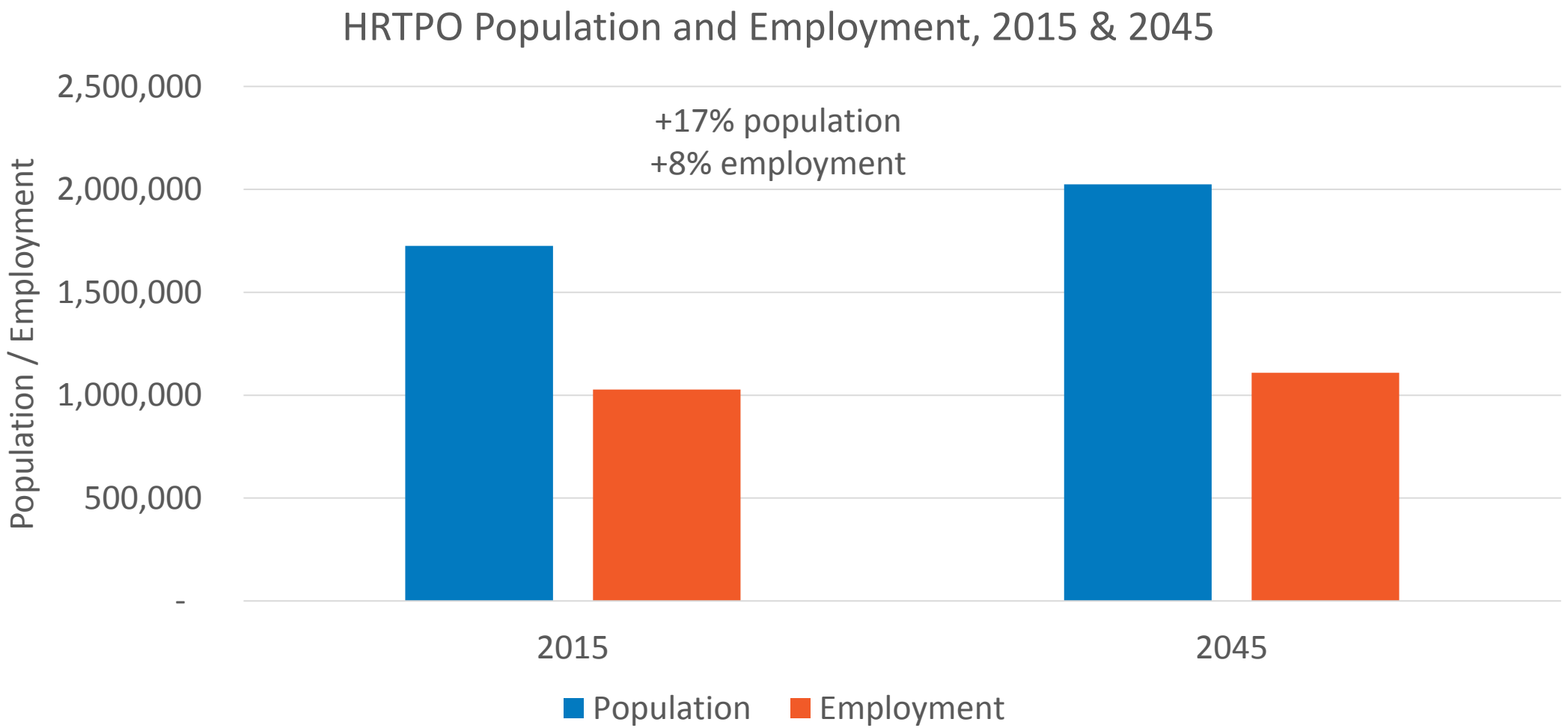
Benchmarking Forecasts

UNDERSTAND TPO'S CURRENT AND FORECAST FUTURE ECONOMIC CONDITIONS

Guiding Principles & Goals of Benchmarking

- TPO's 2045 growth forecasts regarded as conservative baseline
- Alternative future scenarios will involve plausible additional growth
- Additional growth above the baseline forecast will be the *same increment* across the three scenarios, but the composition will differ
- Long-term forecasts are inherently uncertain
- ***Alternative forecasts can provide guidance on defining plausible additional growth***

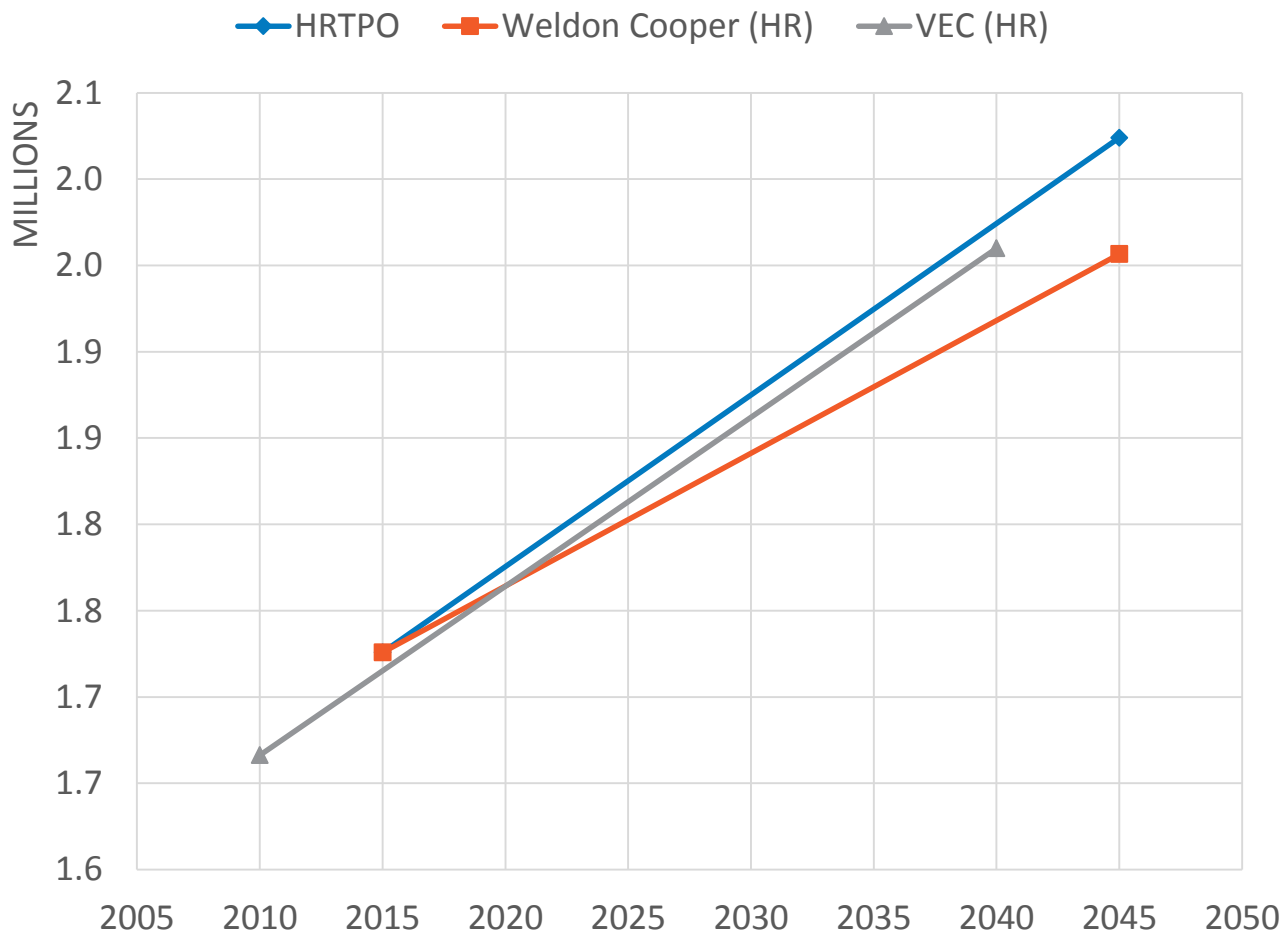
2015 to 2045 TPO Forecast Summary



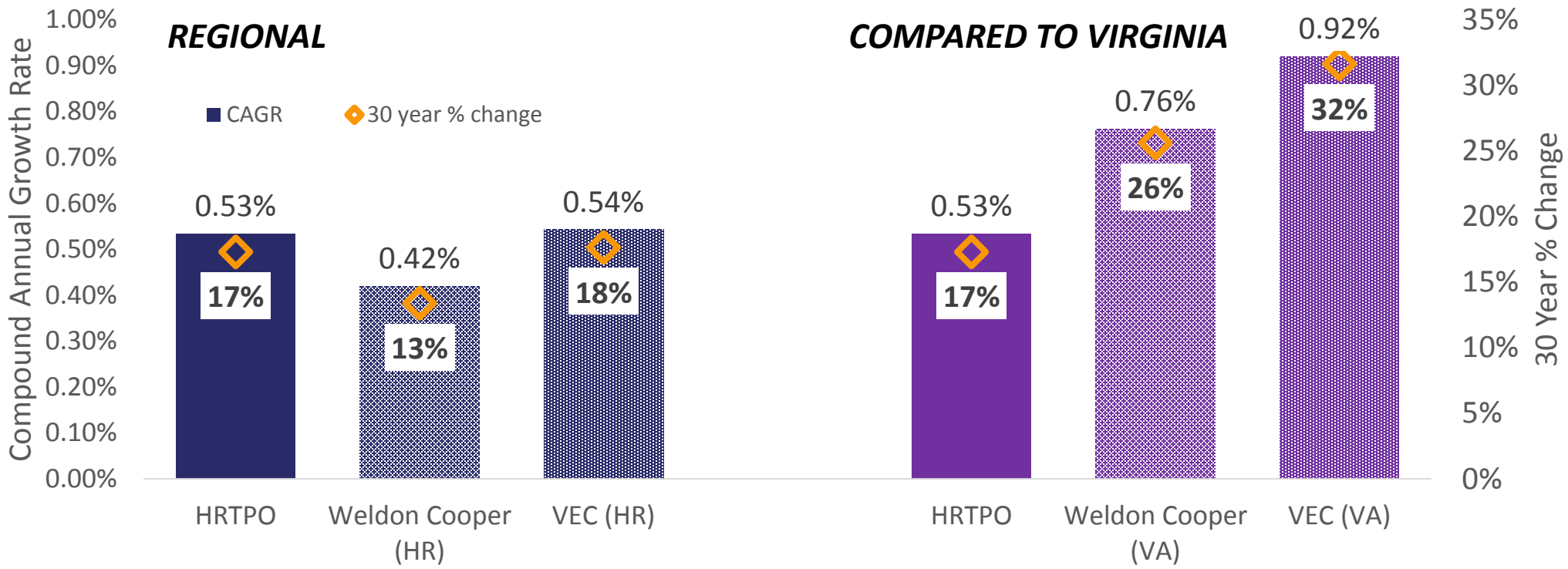
*TPO model forecasts include Surry County

Population Forecasts

- HRTPO Forecasts (REMI Model)
- Weldon Cooper Center for Public Service
- Virginia Employment Commission **Horizon: 2010-2040*



Population Forecasts



- Region: HRTPO forecast similar to VEC, somewhat faster than Weldon Cooper
- Virginia: Faster growth forecast for the Commonwealth as a whole

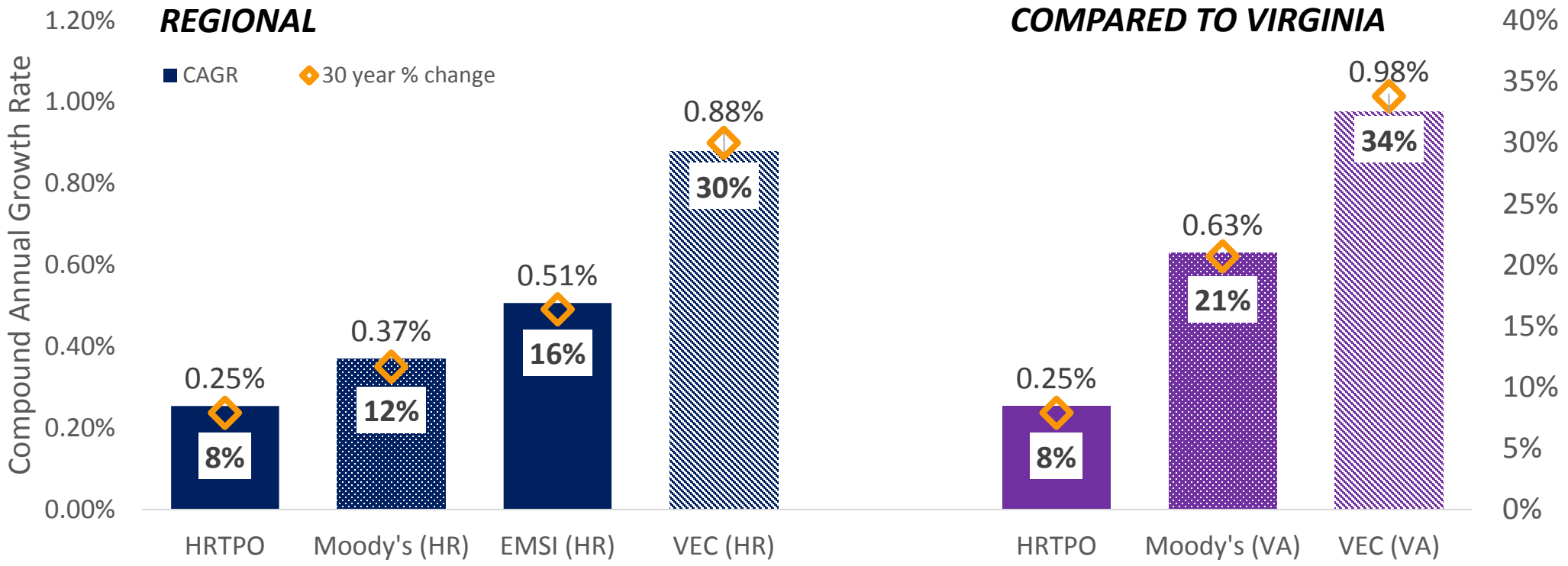
Employment Forecasts

Published for different time horizons:

- HRTPO Forecasts, REMI Model (Horizon: 2015-2045)
- Moody's Economy.com (Horizon: 2015-2045)
- Virginia Employment Commission (Horizon: 2016-2026)*
- Economic Modeling Specialists International (EMSI), published by HREDA (Horizon: 2016-2026)**

*VEC forecasts assembled from Hampton Roads & Greater Peninsula LWIA (does not include Surry Co.)
**HREDA forecasts cover smaller 11 locality geography

Employment Forecasts



- Region: Considerable range in forecast growth rates, with VEC 10-year forecasts most aggressive
- Virginia: Faster growth forecast for the Commonwealth as a whole

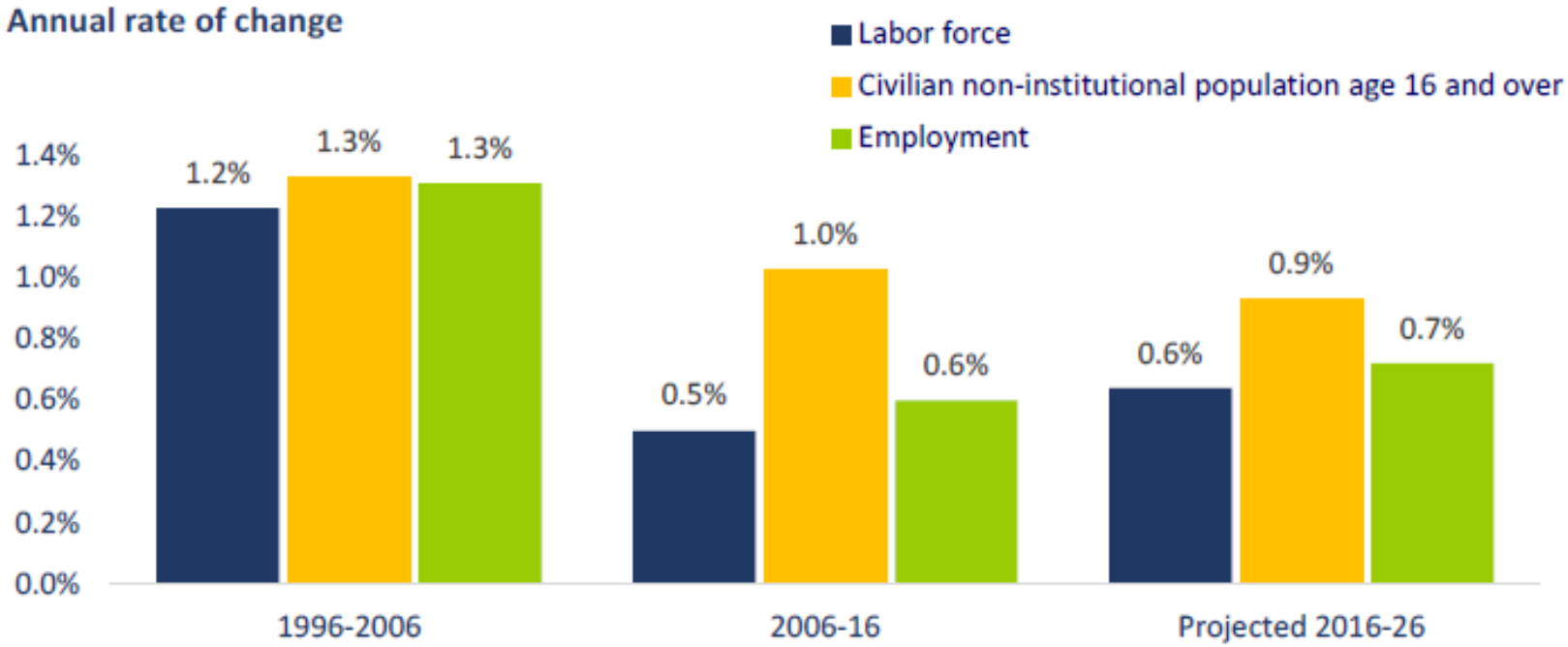
National Reference Growth

HRTPO 2015-2045

Pop = 0.53% CAGR

Emp = 0.25% CAGR

Annual growth rate, by decade, 1996 to projected 2026



Source: Bureau of Labor Statistics

Discussion

- Reminders:
  - The goal is not to *predict,* but to choose a plausible level of additional growth that will be useful in *testing transportation system performance*
  - Increment of growth to be held constant across scenarios – focus will be on the implications of different visions for that additional growth
- Initial reactions to the range of forecasts?
- Thoughts on how aggressive the "beyond 2045" figures should be?

Industry Targets/Opportunities

IDENTIFY ECONOMIC RISKS & OPPORTUNITIES THAT MAY AFFECT PATTERNS OF LONG TERM REGIONAL GROWTH

Industry Targets/Opportunities

- From last time:

HRPDC Regional Economic Development Strategy (2015)	HREDA Go-to-Market Strategy (2019)

• Grow/Maintain 3 Pillars:
  • Federal
  • Port/maritime
  • Tourism/arts & culture
• Diversify
	• Shared (business) services
	• Software & IT
	• Transportation technology
	• Distribution
	• Food & beverage processing

Industry Targets/Opportunities

Additional information:

- GO Virginia Region 5 Growth And Diversification Plan (2017)
- "Digital Port" Opportunities (Working Group Suggestion)
- Preliminary data on national industry trends

GO Virginia Priority Industry Clusters

Clusters chosen on the following criteria:

1. Existing capacity that can be scaled
2. Occupations in these clusters are forecast to grow nationally
3. There is opportunity for the region to create a national identity

Priority Industry Clusters

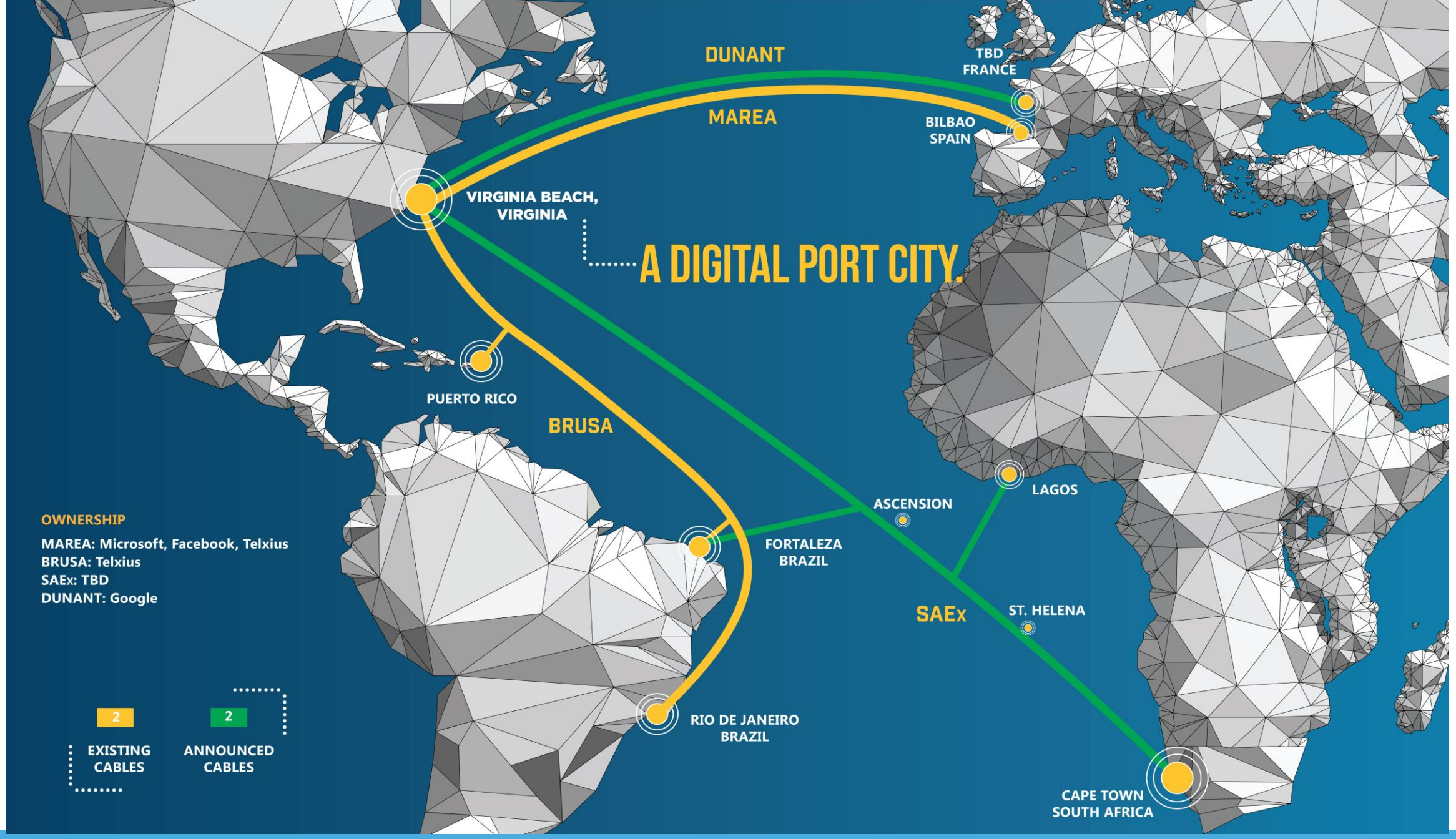
- Advanced manufacturing
- Ship repair and shipbuilding
- Port operations, logistics and warehousing
- Cyber security, data analytics, and Modeling & Simulation
- Water technologies
- Unmanned systems and aerospace
- Life sciences
- Business services
- Tourism and recreation

Priority Clusters vs. Target Business Sectors

- Advanced manufacturing — Food and beverage processing
- Ship repair and shipbuilding — Transportation technology
- Port operations, logistics and warehousing — Distribution
- Cyber security, data analytics, and Modeling & Simulation — Software development and IT
- Water technologies
- Unmanned systems and aerospace
- Life sciences
- Business services
- Tourism and recreation — Shared services

Priority Clusters not included in Go-to-Market Report

- Water technologies
  - Architecture, planning, and engineering for coastal areas/climate research
- Unmanned systems and aerospace
  - Aircraft/drone manufacturing, aircraft parts, robotic manufacturing, and aerospace engineering. Arguably, this could be included in transportation technology
- Life sciences
  - Bio-technology, pharmaceutical and medical device manufacturing. While included in the report, GoVirginia also acknowledges that the region would need to enhance its assets to compete in this space. IBM-PLI reached a similar conclusion.
- Tourism and recreation
  - Not a target business sector in the Go-to-Market Report, but REDS does consider it a pillar of the regional economy


DUNANT
MAREA
TBD
FRANCE
BILBAO
SPAIN
VIRGINIA BEACH,
VIRGINIA
A DIGITAL PORT CITY.
PUERTO RICO
BRUSA
ASCENSION
LAGOS
FORTALEZA
BRAZIL
SAEx
ST. HELENA
RIO DE JANEIRO
BRAZIL
CAPE TOWN
SOUTH AFRICA
OWNERSHIP
MAREA: Microsoft, Facebook, Telxius
BRUSA: Telxius
SAEx: TBD
DUNANT: Google
2
EXISTING
CABLES
2
ANNOUNCED
CABLES

DRAFT

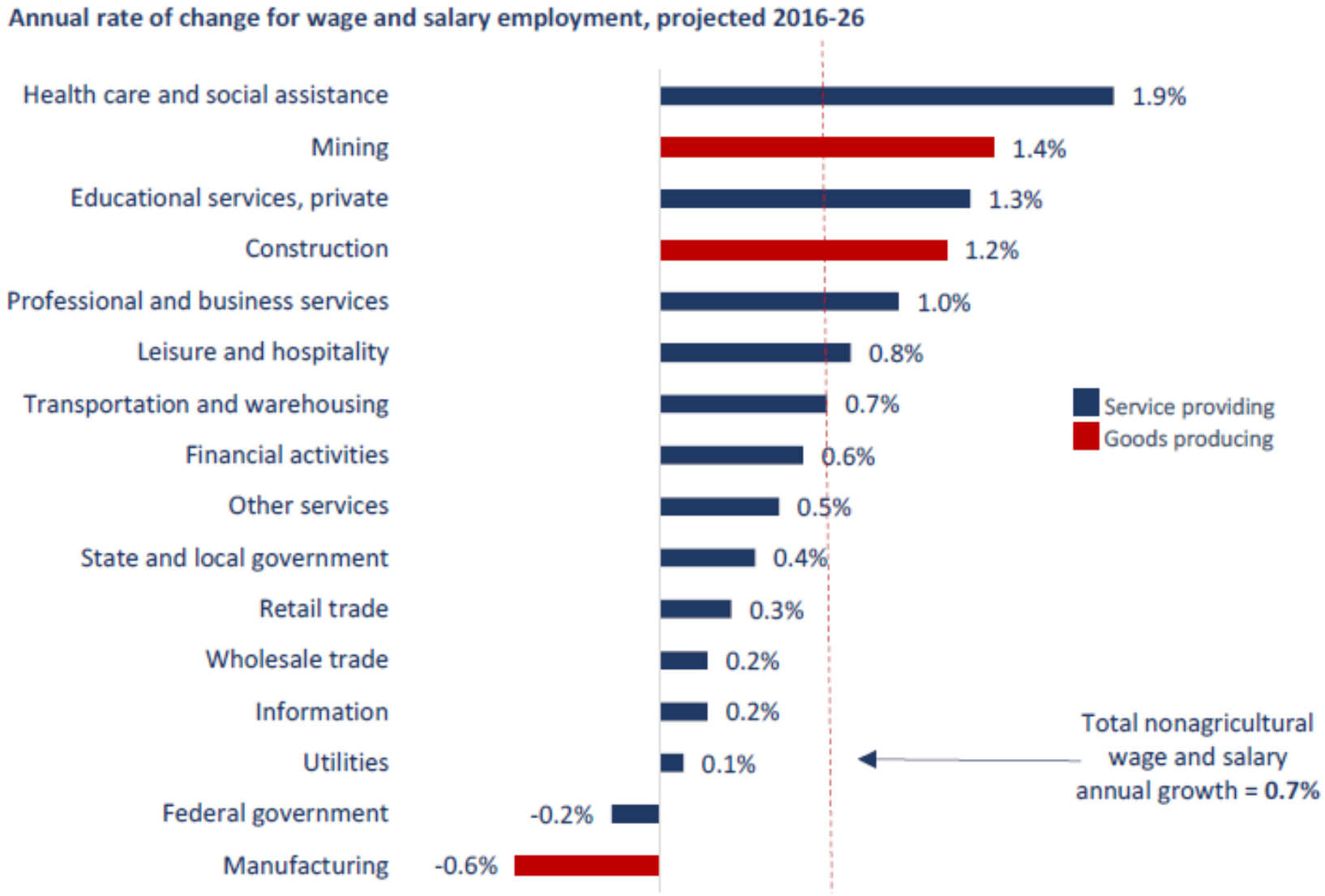
Digital Port Oriented Development

- Virginia beach - targeted recruitment of data centers
  - Advertising sites with energy connections, low tax rates, and fiber access hubs
  - The City has reduced the tax rate for data center equipment
- Developments in progress
  - Globalinx Data Centers plans to open a 10,750 sf center as Phase I of their planned 150,000 sf data center campus in Virginia Beach (in Corporate Landing Business Park)
  - ACA International also plans to develop a 130,000-square-foot data center as part of the relocation of its corporate headquarters to Virginia Beach, as part of its partnership with SAEx
  - The Dutch company NxtVn has bought 219 acres of property in Virginia Beach

Digital Port Opportunities

- Virginia Beach is looking to become a major hub itself, but associated opportunities may be regional in nature
- Growth potential:
  - Data centers, data analytics, and big data.
  - Mix of job opportunities - software engineers and data scientists, but also jobs with lower educational requirement (sales, security, service, etc.)
- Primary competition comes from subsea cable systems in the New York-New Jersey region

National Industry Trends:
Preliminary data



Source: Bureau of Labor Statistics

National Industry Trends: Preliminary Data

20 Fastest Growing (2016-2026)	Top 20 by Employment Growth (2016-2026)
Home health care services	Food services and drinking places
Other information services	Individual and family services
Individual and family services	Construction
Outpatient care centers	Home health care services
Offices of other health practitioners	Offices of physicians
Medical and diagnostic laboratories	Nursing and residential care facilities
Other ambulatory health care services	Computer systems design and related services
Support activities for mining	Hospitals
Other personal services	Local government educational services compensation
Management, scientific, and technical consulting services	Outpatient care centers
Office administrative services	Management, scientific, and technical consulting services
Offices of physicians	Offices of other health practitioners
Warehousing and storage	Services to buildings and dwellings
Computer systems design and related services	Colleges, universities, and professional schools
Software publishers	Warehousing and storage
Offices of dentists	Employment services
Oil and gas extraction	Offices of dentists
Other educational services	Motor vehicle and parts dealers
Local government passenger transit	Wholesale trade
Museums, historical sites, and similar institutions	Agencies, brokerages, & other insurance related activities

National Industry Trends: Preliminary Data

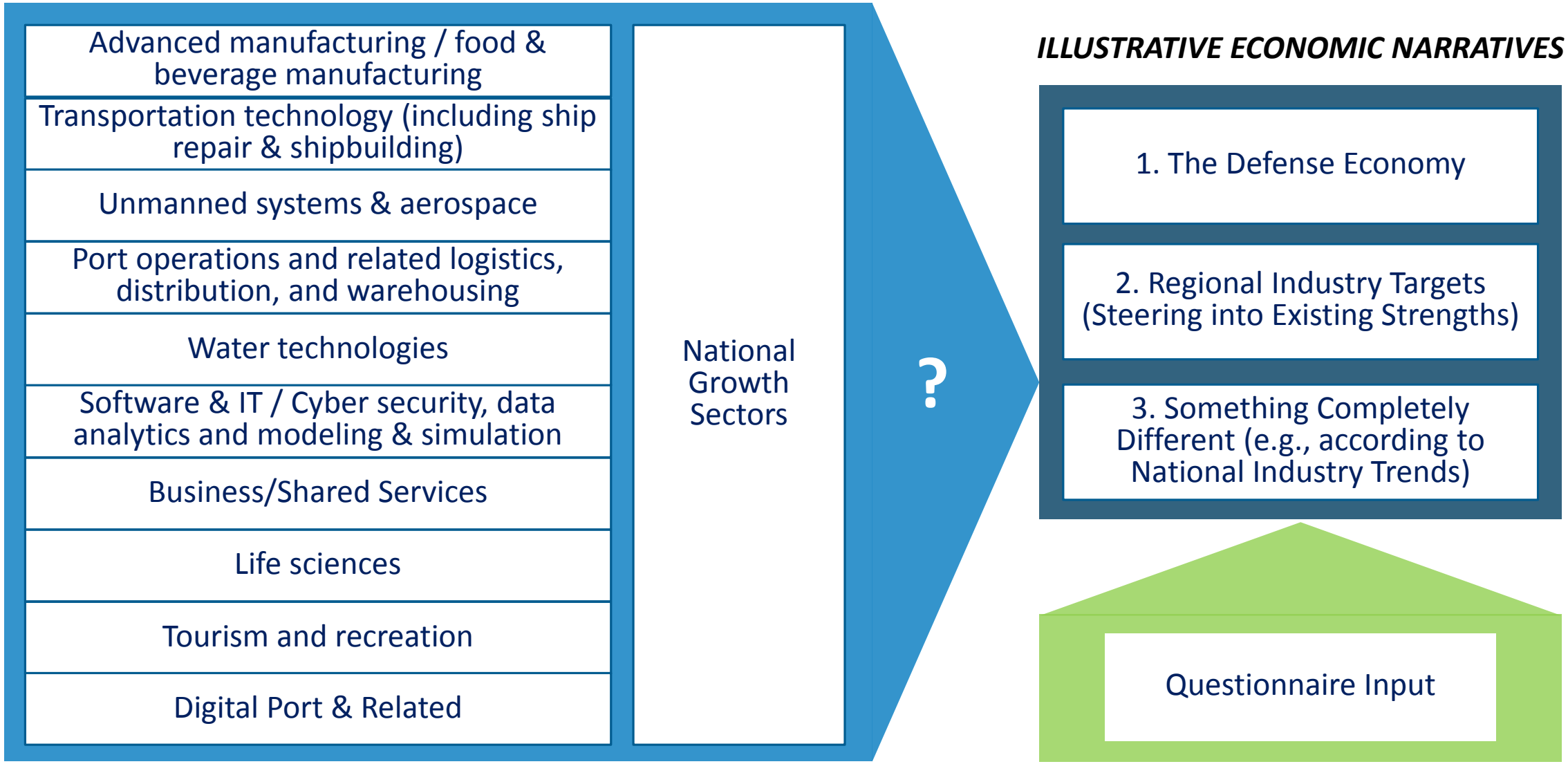
20 Fastest Growing (2016-2026)	Top 20 by Employment Growth (2016-2026)
Home healt[illegible]	Food services and drinking places
Other inforr	ily services
Individual an	on
Outpatien	e services
Offices of other	sicians
Medical and diag	l care facilities
Other ambulatory	nd related services
Support activ	s
Other pers	services compensation
Management, scientific, an	centers
Office admin	nical consulting services
Offices o	n practitioners
Warehousi	and dwellings
Computer systems de	rofessional schools
Software	d storage
Offices	services
Oil and ga	r dentists
Other educa	e and parts dealers
Local government passenger transit	Wholesale trade
Museums, historical sites, and similar institutions	Agencies, brokerages, & other insurance related activities

Next Steps:

Consider which national trends…

- …align with regional forecasts/targets
- …present new potential opportunities

Discussion: Relevance to Scenario Definition



Next Steps

Schedule

Task No	Task	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	2020 JAN
TASK 4	CONDUCT SCENARIO PLANNING													
4.1	Building the Base Data, Models, and Scenarios													
4.2	Defining Alternative Future Scenarios													
4.3	Defining Measures of Success													

Next Webinar:

Alternative Scenarios 1
- Discussion of Potential Drivers & Types of Drivers (primary, secondary, etc.)
- Survey of Economic Trends
- Discussion of Potential Economic Outcomes (Draft Scenarios)

- Draft Deliverables
- Final Deliverables
- Steering Committee Meetings and Presentations
- Working Group Coordination Meeting

- HRTPO to approve updated Prioritization Tool
- 2015 Regional Travel Demand Model available
- 2045 Regional Travel Demand Model available