

Greater Charlotte Regional Freight Mobility Plan

Coordinating Committee Meeting #8



Welcome

October 27, 2016



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Agenda

- Welcome and Introductions
- Plan Schedule and Progress Report
- Discuss FINAL CCOG Strategic Freight Network
- Overview of Freight Forecast Data
- Land Use Technical Memorandum
- Survey Data Collection and Interview Summary
- Project Recommendations and Implementation Discussion
- NCDOT Coordination with Statewide Freight Plan
- Next Steps – Finalizing the Plan

Project Status

 Complete
 Working

Existing Conditions

Bottlenecks

Commodity Flows

O-D Analysis and Freight Corridors

Network Identification

Truck Parking

Land Use, Facility, Infrastructure & Regulatory Gaps

Existing Land Uses

Regional Freight Land Use Policies and Regulations

Truck Parking Capacity and Needs

Economic Impacts Analysis

Road/Rail Network Corridor Demand

Best Practices

Policy and Planning

Technology Trends

Safety and Security

Public Private Partnerships

Prioritizing Regional Needs

Bottlenecks & LOS

Pavement/Bridge Conditions

High Crash Location

Economic Opportunity

Rail/Truck Grade Crossings

Intermodal Connections

Performance Measures

Goals Addressed

Freight Impacted, Related or Focused

Quantifiable and Trackable



Greater Charlotte Regional Freight Mobility Plan

Stakeholder Engagement

Schedule

ID	Task Name	Q3 15			Q4 15			Q1 16			Q2 16			Q3 16			Q4 16			
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1	Task 0: Project Management and Stakeholder Involvement																			
2	Task 1: Analysis of Existing Conditions for Truck and Rail Freight Mobility in the Region																			
3	Task 2: Land Use, Facility, Infrastructure and Regulatory Gap/Future Demand Analysis																			
4	Task 3: Best Practices in Freight Mobility Efficiency, Safety and Technology (ITS)																			
5	Task 4: Prioritize List of Regional Needs																			
6	Task 5: Develop Regional Freight Performance Measures in Accordance with USDOT/MAP-21 Recommendations and State Strategic Freight Plan Requirements																			
7	Task 6: Develop Draft and Final Greater Charlotte Freight Mobility Plan Report																			

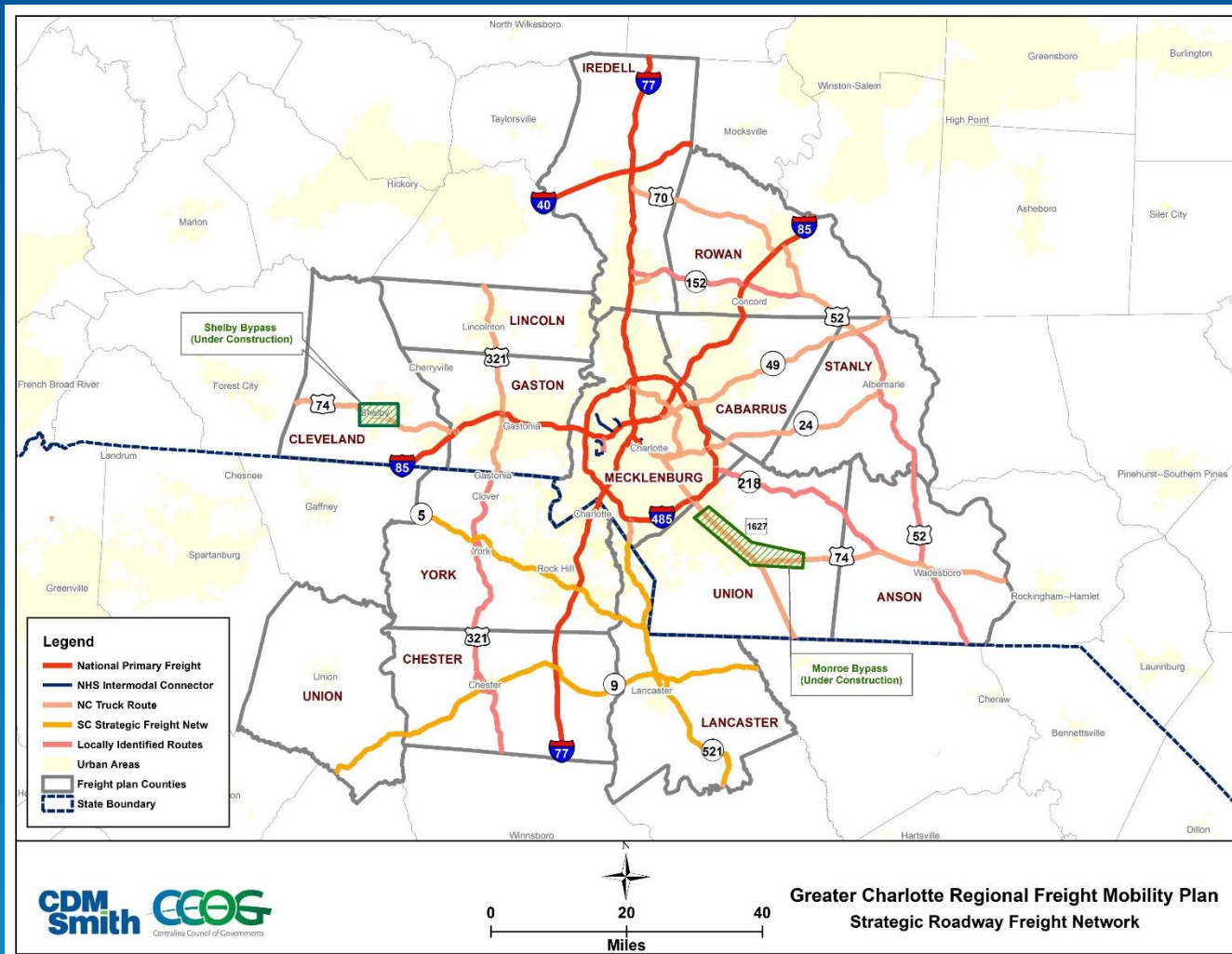


Freight Network Finalization

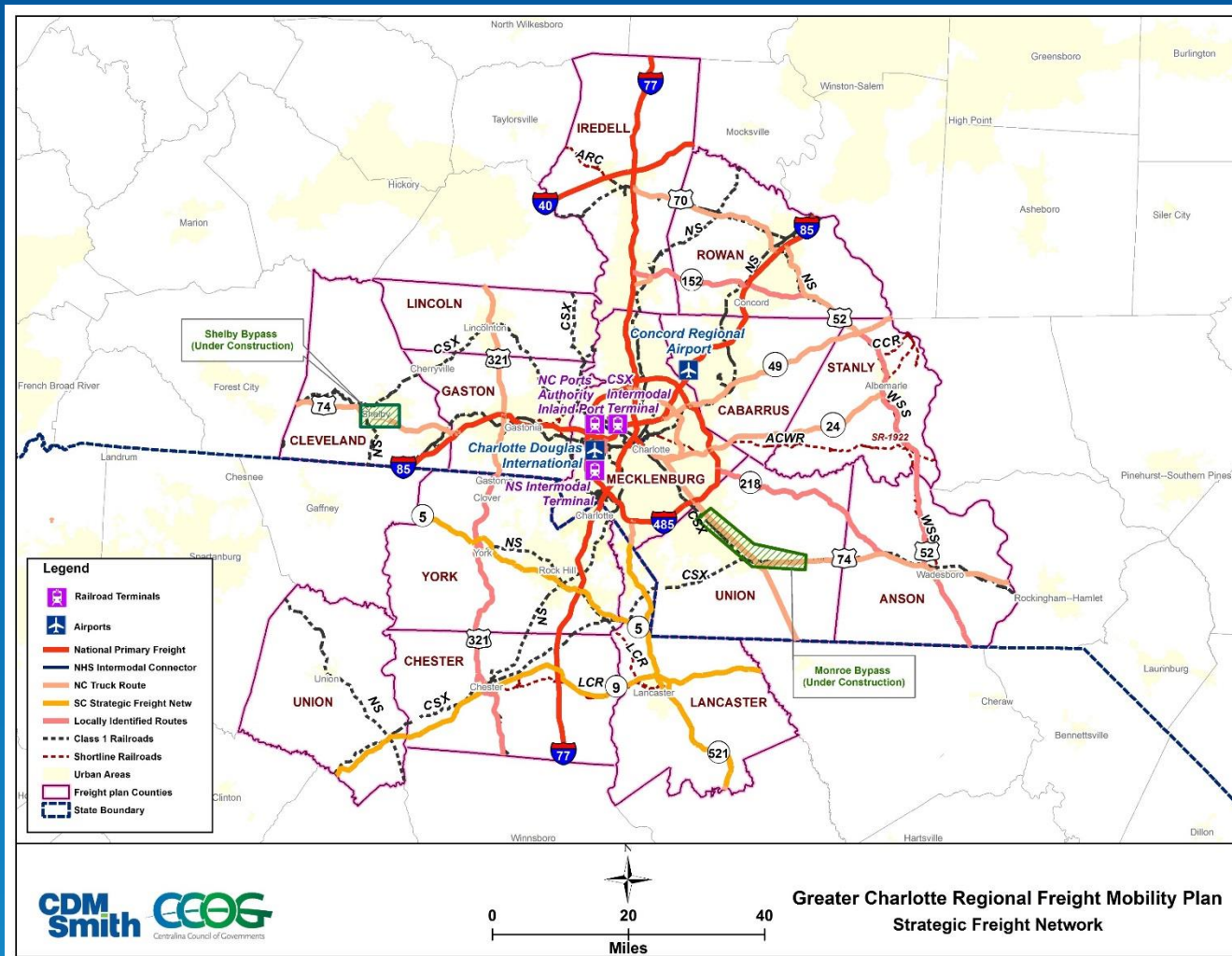


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Final Strategic Freight Network – Roadway Only



Final Strategic Freight Network – All Modes



Freight Forecast Data



Freight Forecast Data – *FAF 4.1*

- Freight Analysis Framework 4.1 (FAF 4.1)
 - Federal Highway Administration (FHWA) and Bureau of Transportation Statistics (BTS)
 - 2015 Base Year, 2045 Forecast (5-year intervals)
 - Three growth scenarios: Baseline, Low Growth and High Growth
- Modes of Transport Reported
 - Air
 - Rail
 - Truck
 - Water
 - Pipeline
 - Multiple
 - Unknown

Freight Forecast Data – *FAF 4.1*

- Regional Freight Flows are reported geographically:
 - Within: Origin and Destination are within the Charlotte Region
 - Outbound: Originating in the Charlotte region and destined to other US regions
 - Inbound: Terminating in the Charlotte region from all other US regions
- Commodity flows reported in multiple units
 - Tonnage
 - Dollar Value
- Flows reported by 42 Commodity Groups (Standard Classification of Transported Goods)

Freight Forecast Data - *Tonnage*

Tons (000)									Change
Trade Type	Flow	2015	2020	2025	2030	2035	2040	2045	2015-2045
Total	Total	111,157	121,102	126,299	131,861	136,832	142,706	150,588	35%
	Inbound	46,032	49,853	52,814	55,201	57,306	59,565	63,036	37%
	Outbound	32,604	36,357	38,663	40,932	43,209	46,098	49,551	52%
	Within	32,521	34,892	34,822	35,728	36,316	37,044	38,000	17%
Domestic	Total	105,817	115,164	119,368	123,759	127,310	131,182	137,531	30%
	Inbound	42,680	46,214	48,662	50,373	51,703	53,044	55,991	31%
	Outbound	30,639	34,085	35,916	37,695	39,337	41,150	43,603	42%
	Within	32,498	34,866	34,790	35,690	36,271	36,987	37,937	17%
Imports	Total	3,392	3,684	4,204	4,889	5,675	6,604	7,135	110%
	Inbound	3,346	3,632	4,143	4,817	5,591	6,504	7,025	110%
	Outbound	27	30	35	41	48	57	62	133%
	Within	19	22	26	31	36	43	48	147%
Exports	Total	1,948	2,254	2,727	3,214	3,846	4,920	5,922	204%
	Inbound	6	7	9	10	13	17	20	267%
	Outbound	1,939	2,242	2,712	3,196	3,824	4,890	5,886	204%
	Within	4	5	6	7	9	13	15	314%

Freight Forecast Data - *Tonnage*

- Total tonnage increase (2015 – 2045) = 35% from 110 million to 150 million tons
 - Domestic increase 30% (105m to 138m tons)
 - Imports increase 110% (3m to 7m)
 - Exports increase 204% (2m to 6m)

Freight Forecast Data – *Dollar Value*

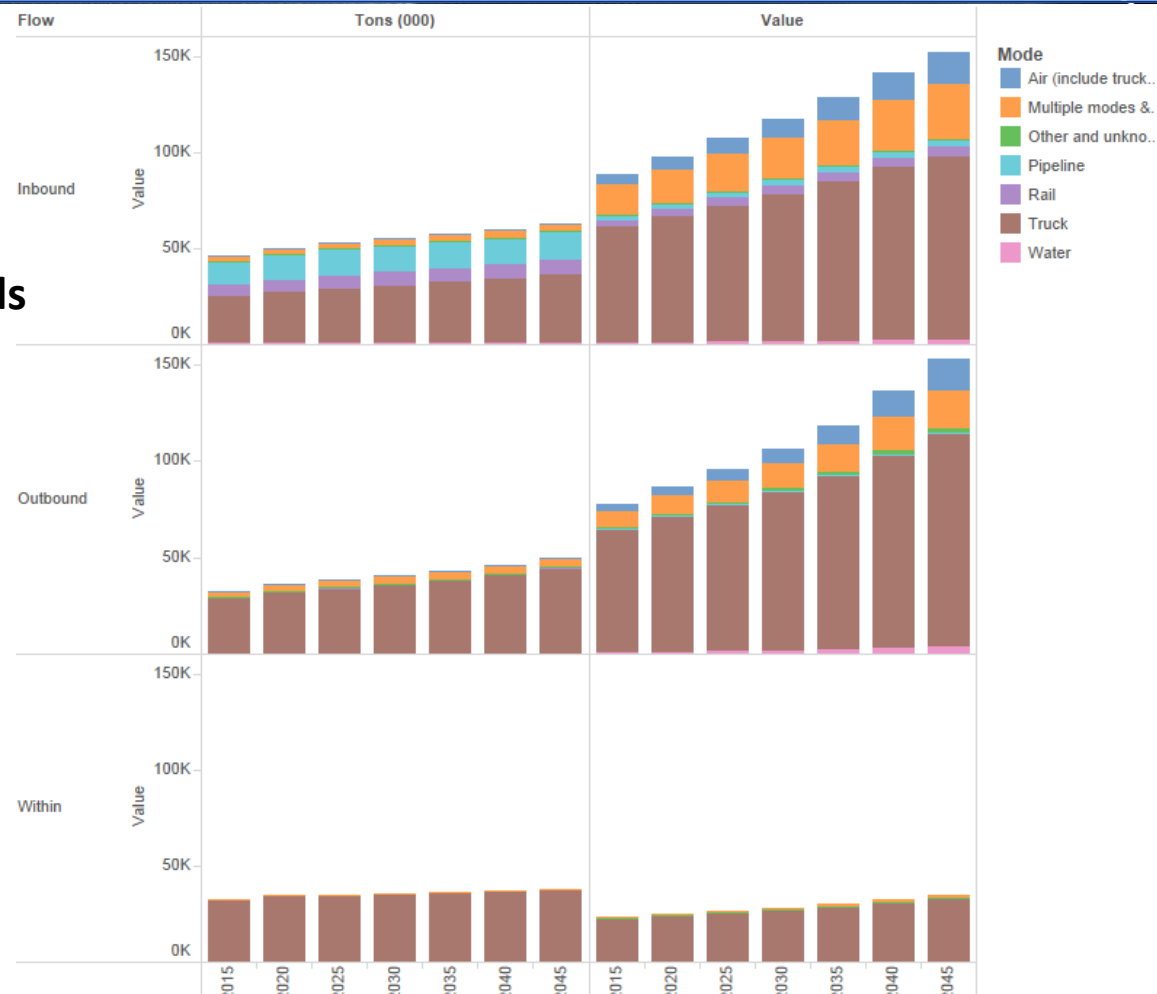
\$Millions									Change
Trade Type	Flow	2015	2020	2025	2030	2035	2040	2045	2015-2045
Total	Total	189,881	209,121	229,528	251,677	277,032	310,093	339,071	79%
	Inbound	88,823	97,591	107,098	117,342	128,478	141,519	151,792	71%
	Outbound	77,668	86,411	95,831	106,160	118,501	136,185	152,664	97%
	Within	23,390	25,119	26,599	28,175	30,053	32,388	34,615	48%
Domestic	Total	157,264	170,566	182,175	194,103	206,837	221,220	237,727	51%
	Inbound	69,879	75,973	81,443	86,701	92,020	97,757	104,309	49%
	Outbound	65,467	71,208	76,251	81,794	87,887	94,999	103,205	58%
	Within	21,918	23,386	24,481	25,608	26,930	28,464	30,213	38%
Imports	Total	20,566	23,419	27,710	33,016	39,164	46,753	50,623	146%
	Inbound	18,461	21,017	24,878	29,667	35,213	42,036	45,463	146%
	Outbound	950	1,078	1,260	1,479	1,736	2,070	2,289	141%
	Within	1,155	1,324	1,572	1,869	2,215	2,647	2,871	149%
Exports	Total	12,051	15,137	19,643	24,559	31,031	42,120	50,721	321%
	Inbound	484	602	777	974	1,246	1,726	2,020	318%
	Outbound	11,250	14,125	18,320	22,886	28,877	39,117	47,170	319%
	Within	318	410	545	698	908	1,277	1,531	382%

Freight Forecast Data - *Tonnage*

- Total dollar value increase (2015 – 2045) = 79% from \$190b to \$339b
 - Domestic increase 51% (\$157b to \$238b)
 - Imports increase 146% (\$21b to \$51b)
 - Exports increase 321% (\$12b to \$51b)

Freight Forecast Data – *Modal Distribution*

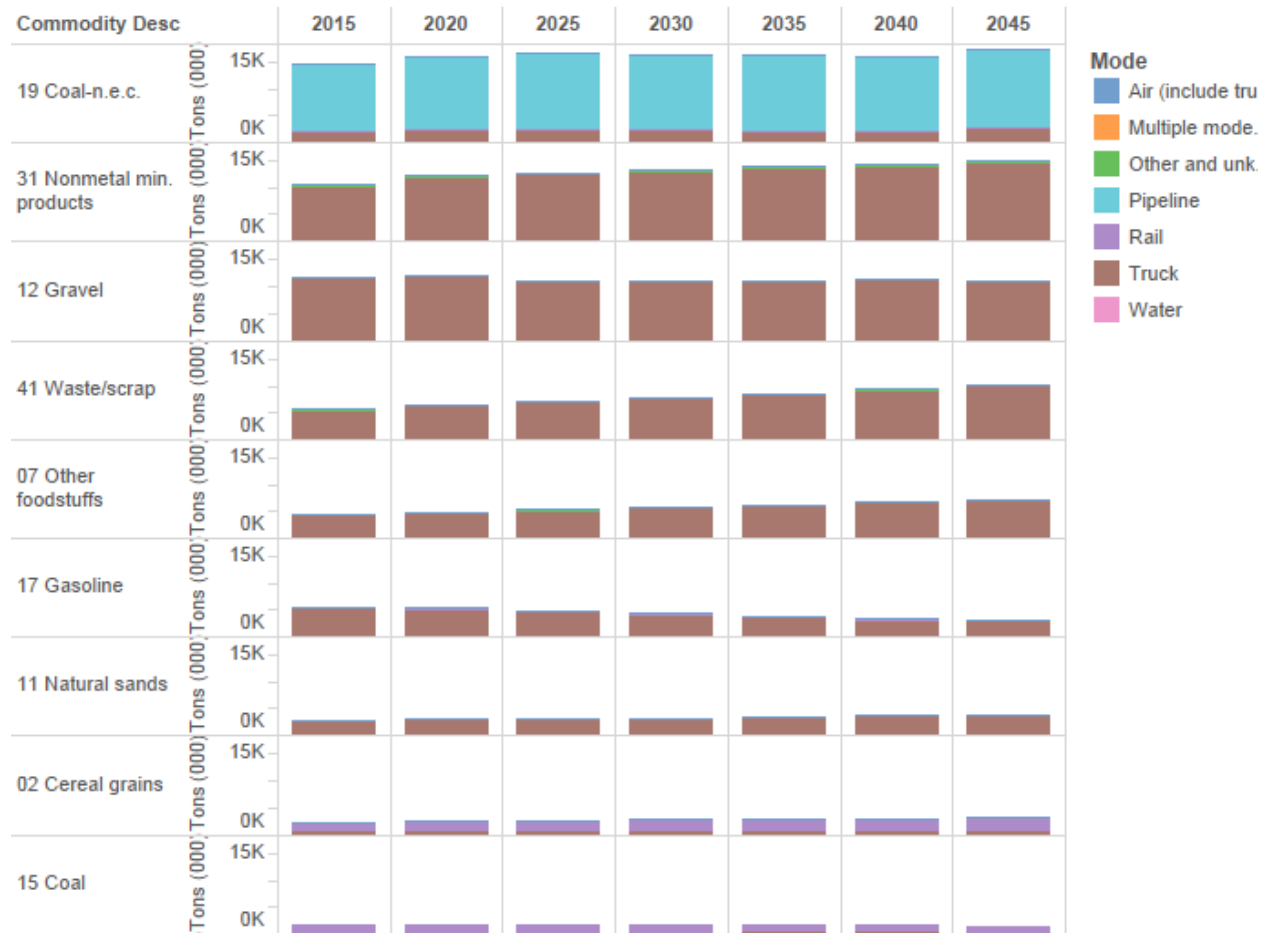
- Truck dominant mode
- Modal distribution constant
- Growth based on economic trends
- Value versus Tonnage



Freight Forecast Data – *Top Commodities*



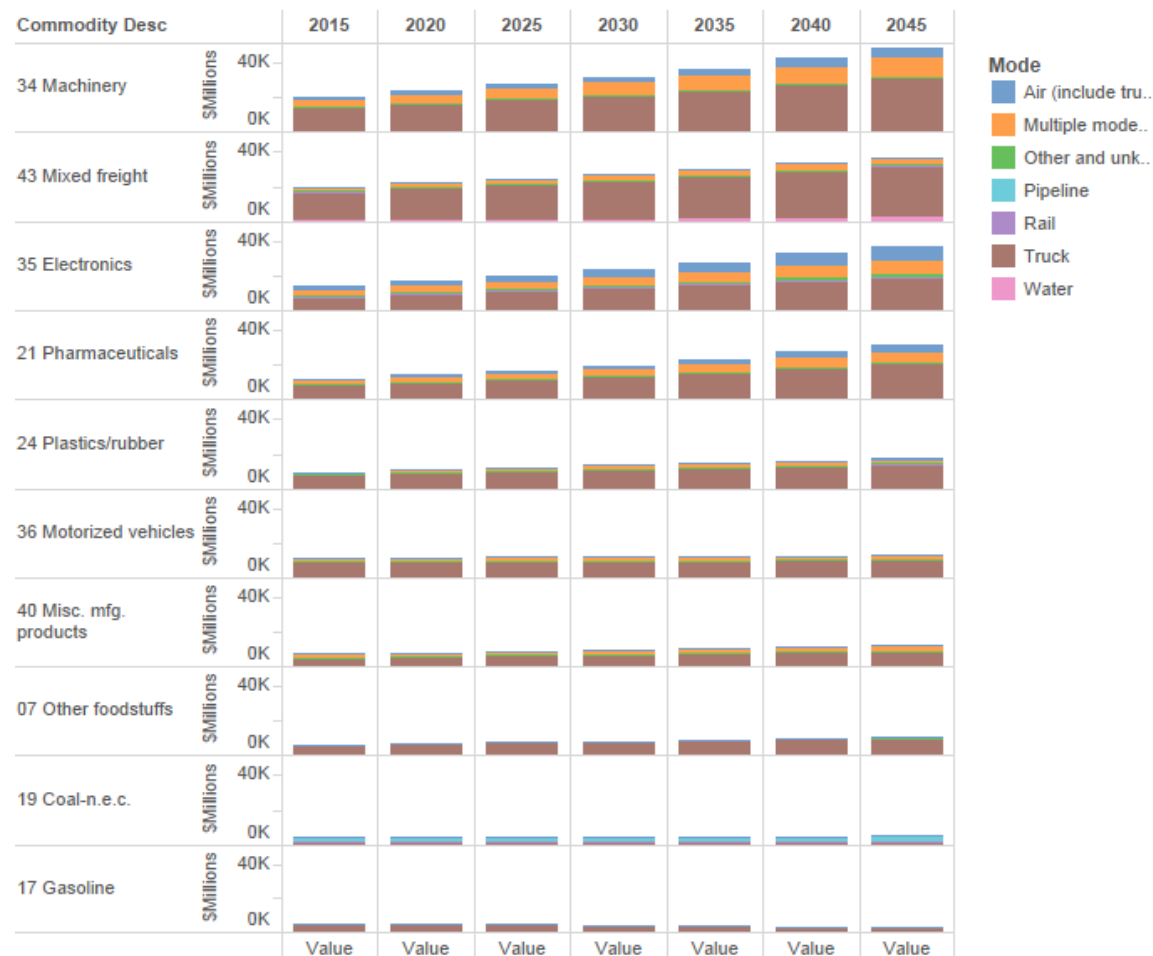
Freight Forecast Data – *Top Commodities, Tonnage, by Mode*



Freight Forecast Data – *Top Commodities, Value*



Freight Forecast Data – *Top Commodities, Tonnage, by Mode*



Freight Forecasts – *Destinations of Outbound Goods, by Tonnage*

Tons (000)								Growth	Share of Total	
	2015	2020	2025	2030	2035	2040	2045	2015-2045	2015	2045
All Destinations	32,604	36,357	38,663	40,932	43,209	46,098	49,551	52%	100%	100%
South Carolina	13,497	15,286	16,110	16,856	17,377	18,169	19,324	43%	41%	39%
Charleston SC	3,801	4,334	4,541	4,729	4,801	5,023	5,237	38%	12%	11%
Greenville SC	1,880	2,219	2,467	2,743	3,014	3,292	3,620	93%	6%	7%
Rest of SC	7,816	8,733	9,102	9,384	9,561	9,854	10,467	34%	24%	21%
North Carolina	7,433	8,043	8,370	8,823	9,322	9,845	10,394	40%	23%	21%
Greensboro--Winston-Salem--High Point NC	2,524	2,662	2,645	2,740	2,848	2,958	3,089	22%	8%	6%
Raleigh-Durham NC	954	1,046	1,109	1,166	1,222	1,283	1,358	42%	3%	3%
Rest of NC	3,956	4,334	4,616	4,917	5,252	5,603	5,947	50%	12%	12%
Virginia	1,577	1,761	1,946	2,144	2,381	2,658	2,923	85%	5%	6%
Rest of VA	978	1,088	1,192	1,303	1,437	1,550	1,679	72%	3%	3%
Richmond VA	142	149	158	168	179	189	202	42%	0%	0%
Virginia Beach-Norfolk VA-NC (VA Part)	404	465	531	602	691	838	955	137%	1%	2%
Washington DC-VA-MD-WV (VA Part)	53	59	65	70	75	80	87	62%	0%	0%
Georgia	1,574	1,734	1,902	2,056	2,244	2,492	2,750	75%	5%	6%
Atlanta GA	717	791	850	903	963	1,029	1,109	55%	2%	2%
Rest of GA	590	642	696	740	793	852	917	56%	2%	2%
Savannah GA	268	301	356	414	488	612	723	170%	1%	1%
Kentucky	990	1,183	1,221	1,243	1,272	1,266	1,321	33%	3%	3%
Tennessee	947	1,020	1,091	1,155	1,228	1,326	1,429	51%	3%	3%
All Others	6,585	7,331	8,023	8,655	9,385	10,342	11,409	73%	20%	23%

Freight Forecasts – *Inbound Origins of Goods, by Tonnage*

Tons								Growth	Share of Total	
	2015	2020	2025	2030	2035	2040	2045	2015-2045	2015	2045
All Origins	46,032	49,853	52,814	55,201	57,306	59,565	63,036	37%	100%	100%
South Carolina	17,970	19,820	21,010	21,476	21,896	22,275	23,834	33%	39%	38%
Charleston SC	3,821	5,041	5,841	6,179	6,457	6,832	7,749	103%	8%	12%
Greenville SC	8,601	8,485	8,457	8,243	8,072	7,853	8,110	-6%	19%	13%
Rest of SC	5,548	6,294	6,712	7,054	7,366	7,590	7,974	44%	12%	13%
North Carolina	6,039	6,456	6,740	7,167	7,550	7,973	8,426	40%	13%	13%
Greensboro--Winston-Salem--High Point NC	2,326	2,530	2,733	2,912	3,028	3,183	3,365	45%	5%	5%
Raleigh-Durham NC	852	936	942	987	1,047	1,086	1,133	33%	2%	2%
Rest of NC	2,861	2,990	3,065	3,268	3,475	3,704	3,929	37%	6%	6%
Georgia	2,768	3,060	3,276	3,512	3,728	3,987	4,174	51%	6%	7%
Atlanta GA	1,029	1,107	1,164	1,232	1,307	1,390	1,464	42%	2%	2%
Rest of GA	852	991	1,053	1,108	1,125	1,147	1,172	37%	2%	2%
Savannah GA	886	961	1,059	1,173	1,297	1,450	1,539	74%	2%	2%
Virginia	2,779	3,052	3,210	3,296	3,362	3,493	3,664	32%	6%	6%
Rest of VA	2,022	2,196	2,271	2,289	2,293	2,344	2,407	19%	4%	4%
Richmond VA	345	393	444	483	517	559	629	82%	1%	1%
Virginia Beach-Norfolk VA-NC (VA Part)	260	293	312	335	362	392	409	57%	1%	1%
Washington DC-VA-MD-WV (VA Part)	152	170	183	191	191	197	219	44%	0%	0%
All Others	16,476	17,465	18,578	19,750	20,770	21,837	22,938	39%	36%	36%

Freight Forecasts – Summary Notes

Total freight tonnage from, to and within the Charlotte region is projected to increase 35% from 2015 to 2045, or at a compound annual growth rate of 1.1% per year. In 2015 about 95% of total freight tons were domestic and these volumes are projected to grow by 30%

Good sign for the economy: Total freight value growth of 79% is expected to be more than double growth in tons, reflecting higher volume growth for high-valued products compared to that of low-valued products.

Freight flows moving within the Charlotte region are predominantly transported by truck; are much less than inbound or outbound flows in terms of tonnage or value; and are expected to grow more slowly, at 17% for tons and 48% for value over the forecast period.

Freight transported by air represents a small portion of tons moved inbound or outbound from the Charlotte region, but it is expected to be the largest mode in terms of growth in value, 176% growth in inbound value from 2015 to 2045 and 350% growth in outbound value over that period. Top product groups transported by air include electronics, machinery, pharmaceuticals, precision instruments and chemical products.

The strongest directional growth is outbound shipping by value, which doubles over the forecast period. Driven by increases in such commodities as machinery, electronics, and pharmaceuticals, this is a very positive indicator for the regional economy.

Freight Forecasts – Plan Applications

- Multimodal Planning Necessary
- Significance of our Intermodal Connectors (Pipeline, Rail, Air)
- Focus on supporting specific industries (machinery, electronics, and pharmaceuticals)
- Highlights value of regional freight planning partnerships

Land Use Technical Memorandum



Survey Data Collection and Industry Interviews



Stakeholder Interviews

- **Assembled List of More Than 80 stakeholders**
 - Representing locations in NC and SC
 - Public Planning Agencies, Economic Development Professionals and Transportation Agencies. Private Sector Freight Shippers, Carriers and Transportation Intermediaries
 - All Modes – Port, Rail, Air Cargo, Highway & Warehouse
- **Interviewed 25 Stakeholders by Phone**
 - Issue and Trend Identification
 - Physical Infrastructure Comments
 - Performance Measures
 - Barriers to Implementation
 - Resource Identification

Interview Findings

Issue	Extent of Impact	Priority
Travel Time Reliability	Significant	High
Congestion	Significant	High
Oversize, Overweight Permits or regulatory issues	Industry Specific	Medium
Highway geometry, turning lanes, highway shoulders,	Urban Areas Primarily	Medium
Highway condition	Important	Medium
Signalization, signage	Important	Medium
Availability of multimodal options	Regional Issue	High
Bridge restrictions	Rural Issue Primarily	Low
Condition of intermodal connectors	Regional Issue	High
Availability of intermodal containers	Regional Issue	Low
Safety	Important	Medium

Interview Findings

- Congestion and Reliability are the two most critical issues
- Collaboration and multi-jurisdictional planning is essential
- Land use planning is critical to calming congestion
- Technology is an essential to improve communication and mobility
- Funding must keep up with population growth

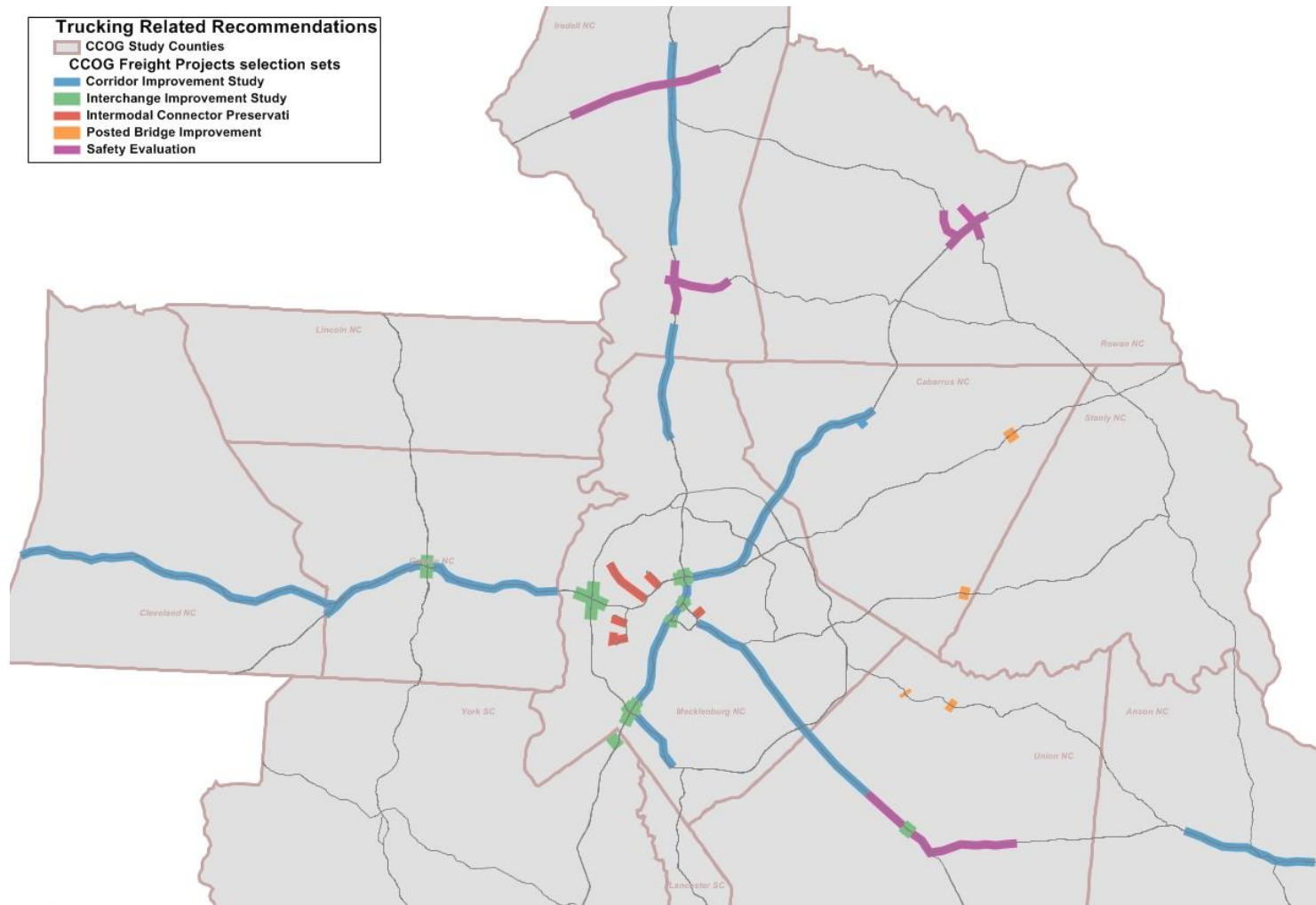
Plan Recommendations



Presentation of Recommendations

TRUCKING FREIGHT NEEDS								Charlotte Regional Freight Mobility Plan: GOAL AREAS										
CATEGORY	MAP IDENTIFIER	SOURCE	RECOMMENDATION	NOTES	BOTTLENECK (As identified in analysis)	SAFETY (Located in safety risk area)	On National Priority Freight Network	Economic Comp. & Efficiency	Safety & Security	Infrastructure Preservation & Maintenance	Environmental Stewardship	Congestion & Reliability	Performance & Accountability	Regional Coordination	Freight Criteria		Freight Factor	
Project	Not Mapped	Stakeholder Feedback	Reduce risk to non-motorized transportation users. Clearly sign and mark bicycle and pedestrian facilities where the Strategic Freight Network and state/local bike routes overlap.	NEED TO OVERLAY STRATEGIC FREIGHT NETWORK WITH AVAILABLE GIS FILE OF REGIONAL BIKE LANES	0	1	0									Freight Related		Improves
Program	Not Mapped	Truck Parking Analysis	Identify areas of needed truck parking and rest areas along the region's Strategic Freight Network	GIS operation illustrating areas where truck parking utilization has exceeded available capacity; site selection study within Corridors and Concentration areas and Strategic Freight Network	0	1		Yes	Yes	Yes			Yes	Yes		Freight Focused		Significantly improves
Policy	Not Mapped	RFATS 2035 LRTP	Review existing policies and practices on the preservation of rail-served industrial sites and preservation of industrial railroad corridors.		0	0	0	3.3		Yes			Yes	Yes		Freight Focused		Improves
Program	Not Mapped	Bridge Inventory, Stakeholder Feedback	Address and prioritize # functionally obsolete and # structurally deficient bridges on the region's Strategic Freight Network	Inventory bridges on the Strategic Freight Network and prioritize needs	0	0	0	Yes	Yes	Yes			Yes			Freight Impacted		Somewhat improves
Program	Not Mapped	Stakeholder Feedback	Change needed in the public perception that increases in truck size and weight limits will impact roadway quality and compromise safety	Focus on identified "Corridors and Concentrations" for preservation and expansion of roadway access to major facilities.	0	0	0		Yes	Yes	Yes			Yes		Freight Focused		Does not improve
Program	Not Mapped	Stakeholder Feedback	Incident management is a priority for responding to increased congestion, safety issues during highway construction, and impacts of vehicular accidents	Promote enforcement of North Carolina's "Quick Clearance Law" and South Carolina's	0	1	0	Yes	Yes	Yes		Yes	Yes	Yes		Freight Impacted		Significantly improves
Policy	Not Mapped	Stakeholder Feedback	Program additional transportation funding mechanisms, particularly for highway maintenance and construction	Focus on identified "Corridors and Concentrations" and Strategic Freight Network for preservation and expansion of roadway access to major facilities.	0	0	0	Yes		Yes			Yes			Freight Impacted		Significantly improves
Program	Not Mapped	Stakeholder Feedback	Program improvements to infrastructure to handle heavy and wide shipments	Focus on identified "Corridors and Concentrations" for preservation and expansion of roadway access to major facilities.	0	0	0		Yes	Yes				Yes		Freight Focused		Improves
Program	Not Mapped	Stakeholder Feedback	Improve of currently inadequate sections of rural highways	Focus on identified deficient bridges, "Corridors and Concentrations," and Strategic Freight Network for preservation and expansion of roadway access to major facilities.	0	0	0	Yes	Yes	Yes		Yes	Yes			Freight Related		Improves
Program	Not Mapped	Stakeholder Feedback	Identify and address concerns related to perceived/actual high costs and inability to ship products to the ports	Partner with NCDOT and SCDOT on statewide and multistate planning efforts to identify pathways connecting the Charlotte region to seaports	0	0	0							Yes		Freight Focused		Improves
Program	Not Mapped	Stakeholder Feedback	Remove mentality of Truck Restricted Lanes, but rather Truck Only Lanes (these lanes should be wider and safer accessibility to on and off ramps, etc.)	Enhance public awareness (through the Freight Advisory Committee) of the trucking industry and enlighten traveling public about the value of freight mobility	0	0	0		Yes	Yes				Yes		Freight Focused		Somewhat improves
Program	Not Mapped	Stakeholder Feedback	Provide training for truck drivers (CDL Programs-CPCC)	Partner with local training centers to raise awareness and promote training opportunities in the region.	0	0	0				Yes			Yes		Freight Focused		Improves

Presentation of Recommendations



NCDOT Statewide Plan Coordination

Greater Charlotte Regional Freight Mobility Plan

Coordinating Committee Meeting #8



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