

Table 6-3. Estimated budget for Approach#1 Implementation

Budget Item	Estimated Cost	Notes
Project coordination & regional data steward (0.5 Full-Time Equivalent (FTE))	\$20,000–\$40,000/year	Can be hosted by a regional entity, such as Central Pines, Triangle West, GoTriangle or CAMPO; covers coordination & governance. Future discussion with regional entities is needed to identify the most appropriate transit data steward for the region.
Integration software/scripts	\$10,000–\$15,000 (Year 1)	Open-source tools exist; customization and integration may be needed.
Metadata development and feed documentation	\$5,000–\$10,000 (Year 1)	One-time cost for feed standards, dataset description, and metadata.
Portal landing page (basic website or Content Management Systems (CMS))	\$5,000–\$15,000 (Year 1)	Lightweight approach using WordPress, CKAN, or similar tools.
GTFS and GTFS-RT feed validation tools	\$5,000–\$15,000 (Year 1)	Tools like Transitland Feed Registry or Google Transit Validator.
Staffing: Part-time data coordinator (0.5 FTE)	\$40,000–\$60,000/year	For data Quality Assurance (QA), updates, support, and communication with agencies. Can include staff time for data automation work on dashboard for region.
Ongoing hosting & maintenance	\$10,000–\$15,000/year	For server space, cloud backups, and domain registration.

Approach #2: Develop a Regional Open Data Portal with Dashboards, Analytics, and Public Engagement Tools

Approach 2 introduces more sophisticated user interfaces, real-time visualizations, and data tools, and as such, has higher upfront and recurring costs. Table 6-4 presents an estimated budget for implementing this approach. The total initial year investment is estimated to range from approximately \$130,000 to \$205,000, with annual ongoing costs projected between \$90,000 and

\$130,000^{39 40 41 42}. Major cost drivers for implementation include platform licensing (e.g., Socrata, ArcGIS Hub), dashboard development, and integration of diverse data sources like performance metrics or GIS overlays. The complexity of desired features, such as API endpoints, interactive charts, or accessibility filters, has a direct impact on costs. However, agencies can manage these expenses by leveraging existing enterprise licenses or dedicating internal staff with GIS or data science expertise to manage dashboard content and system upkeep. Over time, as with Approach 1, staffing becomes the largest share of recurring costs, covering data curation, stakeholder support, and continuous improvements to meet public and partner expectations. External development and maintenance contracts add flexibility but also increase costs.

Table 6-4. Estimated budget for Approach#2 Implementation

Budget Item	Estimated Cost	Notes
Regional data portal platform (ArcGIS Hub/Socrata)	\$30,000–\$60,000/year	Pricing varies; consider platform already in use by city/county agencies.
Dashboard & analytics development (e.g., Power BI)	\$20,000–\$40,000 (Year 2+)	Interactive visualizations for ridership, performance, and equity.
Custom APIs and developer documentation	\$10,000–\$25,000 (Year 2+)	To allow real-time data access and app development.
GIS data integration and mapping tools	\$15,000–\$30,000 (Year 2+)	Includes stop locations, routes, amenities, and overlays.
Schema and standardization efforts (GTFS-ride, etc.)	\$10,000–\$20,000 (Year 1)	Needed for ridership, APC, and performance datasets.
Staffing: Full-time open data coordinator (1 FTE)	\$75,000–\$100,000/year	Leads data governance, QA, publishing, and stakeholder engagement. Can include staff time for data automation work on dashboard for region.
Regional stakeholder engagement & training	\$10,000–\$15,000/year	Workshops, technical assistance, and agency coordination.
Cybersecurity & licensing audit	\$5,000–\$10,000 (Year 1)	Terms of use, access levels, and compliance.

³⁹ City of Fort Collins. (n.d.). *Open data portal software as a service: RFP documents*. Retrieved from <https://records.fcgov.com/WebLink/DocView.aspx?dbid=0&id=8604650&repo=FortCollins>

⁴⁰ City of Sacramento. (2023). *Enterprise agreement with Esri for ArcGIS software* [Council report]. Retrieved from https://sacramento.granicus.com/MetaViewer.php?clip_id=5619&meta_id=738436&view_id=22

⁴¹ City of Chicago. (2023). *Application infrastructure hosting and cloud computing services: Tyler Technologies Inc. (AIS)* [Procurement document]. Retrieved from <https://www.chicago.gov/content/dam/city/depts/dps/SoleSource/NCRB2023/Tyler%20Technologies%20Inc%20%28AIS%29%20-%20Application%20Infrastructure%20Hosting%20and%20Cloud%20Computing%20Services.pdf>

⁴² National League of Cities. (2016). *Open data policies report*. Retrieved from <https://www.nlc.org/wp-content/uploads/2016/12/CSAR-Open-Data-Report-FINAL.pdf>

Tables 6-5 and 6-6 on the following page present a recommended split of the cost estimate among Wake, Durham, and Orange Counties based on a percentage of 2024 NTD hours within the region. The average amount of the range of figures provided in Tables 6-3 and 6-4 is multiplied by the percent of all NTD hours for each agency to arrive at the totals presented in Table 6-5 and 6-6. Note that these are planning-level cost estimates to guide Counties in planning for the two approaches described within this chapter.

Table 6-5. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Approach 1 - Leveraging Existing Data Feeds

	2024 NTD Hours **	Percent of All NTD Hours		Year 1 Total	Annual Total (Years 2-5)	Totals
GoTriangle	146,063	11%	Wake County Total	\$23,972	\$55,436	\$245,717
GoCary	73,052	6%	GoRaleigh Estimate	\$19,211	\$44,425	\$196,912
GoDurham	282,605	22%	GoCary Estimate	\$2,268	\$5,244	\$23,244
GoRaleigh	618,864	48%	GoTriangle Estimate	\$2,494	\$5,767	\$25,561
Chapel Hill Transit	167,983	13%	Durham County Total	\$10,133	\$23,432	\$103,863
			GoDurham Estimate	\$8,773	\$20,287	\$89,920
Total	1,288,567	100%	GoTriangle Estimate	\$1,360	\$3,146	\$13,942
** Annual Vehicle Revenue Hours			Orange County Total	\$6,381	\$14,757	\$65,407
Note: Cost estimate split is based upon the planning-level cost estimate by vehicles. GoTriangle hours are split 55/30/15 among counties.			Chapel Hill Transit Estimate	\$5,215	\$12,059	\$53,449
			OCPT Estimate	\$487	\$1,125	\$4,987
			GoTriangle Estimate	\$680	\$1,573	\$6,971

Table 6-6. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Approach 2 - Developing Regional Open Data Portal

	2024 NTD Hours **	Percent of All NTD Hours		Year 1 Total	Annual Total (Years 2-5)	Totals
GoTriangle	146,063	11%	Wake County Total	\$13,484	\$128,852	\$528,891
GoCary	73,052	6%	GoRaleigh Estimate	\$10,806	\$103,259	\$423,841
GoDurham	282,605	22%	GoCary Estimate	\$1,276	\$12,189	\$50,031
GoRaleigh	618,864	48%	GoTriangle Estimate	\$1,403	\$13,404	\$55,019
Chapel Hill Transit	167,983	13%	Durham County Total	\$5,700	\$54,464	\$223,558
			GoDurham Estimate	\$4,935	\$47,153	\$193,547
Total	1,288,567	100%	GoTriangle Estimate	\$765	\$7,311	\$30,010
** Annual Vehicle Revenue Hours			Orange County Total	\$3,589	\$34,299	\$140,785
Note: Cost estimate split is based upon the planning-level cost estimate by vehicles. GoTriangle hours are split 55/30/15 among counties.			Chapel Hill Transit Estimate	\$2,933	\$28,028	\$115,046
			OCPT Estimate	\$274	\$2,615	\$10,734
			GoTriangle Estimate	\$383	\$3,656	\$15,005

While Approach 1 offers a low-cost and practical starting point by centralizing access to existing transit feeds, Approach 2 provides a more future-ready solution that aligns with long-term regional goals. By incorporating interactive dashboards, performance metrics, and advanced data visualization tools, Approach 2 enables deeper insights for planners, researchers, and the public. It supports more sophisticated use cases such as equity analysis, service optimization, and cross-agency performance comparisons—capabilities that are increasingly essential for modern transit planning and public accountability. Additionally, by investing in a robust platform now, regional agencies can reduce technical debt over time and avoid duplicative efforts across agencies, ultimately fostering stronger collaboration and public trust.

Table 6-7 presents a summary of the pros and cons of these two approaches for review and consideration.

Table 6-7 Comparison of Pros and Cons of Approaches for Regional Open Data Portal

Approach 1: Leverage Existing Data Feeds to Build Open Data Portal		Approach 2: Develop New Regional Open Data Portal	
Pros	Cons	Pros	Cons
Lower cost overall due to use of existing agency resources	Limited in different types of analyses that could be performed	More sophisticated user interfaces	Higher cost due to licensing with vendors
Minimizes new system development	Require lead agency to manage ongoing coordination in region	Aligned with longer term regional goals	Additional cost with maintenance of servers over time
Use of existing staff as regional steward(s) for data analysis		Can allow for deeper analysis of equity and service optimization	
Use of existing data feeds in region		Can help to reduce duplicative efforts	

6.8 Roadmap and Resiliency Plan for OTD in Future Years

The following roadmap outlines phased steps that regional transit partners can take to establish and sustain an Open Transit Data (OTD) Portal, regardless of whether they pursue a foundational data aggregation model (Approach 1) or a more advanced portal with analytics and dashboards (Approach 2). Phases 1 through 4 represent common actions applicable to both approaches, including data standardization, governance, and centralized public access. Phases 5 and 6 apply when the region elects to pursue the expanded functionality described in Approach 2, such as visualization tools, performance dashboards, and engagement features. This roadmap is supported by resiliency strategies to ensure the portal remains accurate, secure, and adaptable over time.

Figure 5-6. Budgetary Planning-Level Recommendations for Transit Agency Consideration²⁷

	Per Vehicle Estimate for Transit Agencies	Notes on Cost Estimates for Agency Considerations
Software for creating GTFS-Static	\$180-\$700 annually per vehicle	Costs are based on existing contracts held by Rio Metro Regional Transit District, Northwest Arkansas Regional Planning Commission and posted prices by AddTransit
Average Cost	\$440 per vehicle	

Figure 5-7. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Regional GTFS Updates

Agency	Buses in Fleet **		Total Cost per Year	Total Cost for all Years 1-5
GoTriangle	82	Wake County Total	\$88,044	\$440,220
GoCary	20	GoRaleigh Estimate	\$59,400	\$297,000
GoDurham	63	GoCary Estimate	\$8,800	\$44,000
GoRaleigh	135	GoTriangle Estimate	\$19,844	\$99,220
Chapel Hill Transit	99	Durham County Total	\$40,348	\$201,740
		GoDurham Estimate	\$27,720	\$138,600
** Based on 2024 NTD Data		GoTriangle Estimate	\$12,628	\$63,140
Note: Cost estimate split is based upon the planning-level cost estimate by vehicles. GoTriangle hours are split 55/30/15 among counties.		Orange County Total	\$53,036	\$265,181
		Chapel Hill Transit Estimate	\$43,560	\$217,800
		OCPT Estimate	\$4,064	\$20,321
		GoTriangle Estimate	\$5,412	\$27,060

²⁷ Costs for GTFS-RT are outlined in Chapter 1, Real-time and Trip Planning.

4.6.1 Regional Fare Collections Budget Recommendations (Wake, Durham, and Orange County)

The region’s agencies have different fare collection equipment systems on board their buses. The following provides a rough order-of-magnitude (ROM) estimate for three options to achieve regionally integrated payments. See Appendix B for a more detailed estimate.

Three agencies in the region use Umo 2.0 validators for electronic fare collection and two currently collect cash using Genfare fareboxes to collect fixed route fares in the region. As shown earlier in Figure 4-3, three agencies representing the highest ridership in the region collect fares while ten do not collect fares at this time. The blended approach of fare-free transit and fared transit creates additional complexity when regionalizing a payment system. Agencies working towards integrating a regional payment system typically align fare policies, business rules, hardware, and software solutions. The fewer variations and exceptions to rules typically translate into a simpler development and deployment of integrated payments in the region. It also translates into simpler fare rules that riders can understand and generalize for travel in the region.

In addition to the capital costs below, when agencies seek common fare collection systems agencies must consider funding internal work by planning and operations staff in the region for agency collaboration before, during, and after procurements. Regional alignment requires coordination and mutual understanding of current systems and criteria of future fare collection system throughout design and implementation.

Assumptions: While initial integration effort is considered, none of the on-going operational costs (SaaS, transaction fees, cell service, etc.) are included. Estimates are limited to equipment, hardware, and related software implementation including initial integration development and back-office development. Fleet size is based on 2023 NTD data. Table 4-1 presents a recommended split of the cost estimate among Wake, Durham, and Orange Counties based on a percentage of 2024 NTD hours within the region. The average amount of the range of figures provided for Options A, B, and C below are multiplied by the percent of all NTD hours for each agency to arrive at the totals presented in Table 4-1. Note that these are planning-level cost estimates to guide Counties in planning for the three approaches described within this chapter.

	OPTION A. Replace/upgrade current fareboxes with single validating farebox for all payments and open loop functions. Remove validators in use. Single back office.		OPTION B. Replace validators to accept open payment. Replace fareboxes with mechanical farebox. Single back office.		OPTION C. Integrate existing systems with open payment overlay. Keep newer existing fareboxes. Likely validator replacement. Preserve back-office status-quo.	
	Low	High	Low	High	Low	High
System Costs	\$4,112,500	\$6,557,800	\$1,582,500	\$3,278,800	\$3,007,500	\$4,524,800
Variable System Costs	\$2,454,990	\$5,177,870	\$2,454,990	\$5,177,870	\$2,454,990	\$5,177,870
Warranty	\$104,400	\$182,700	\$104,400	\$182,700	\$104,400	\$182,700
Option Estimate TOTAL	\$6,671,890	\$11,918,370	\$4,141,890	\$8,639,370	\$5,566,890	\$9,885,370

NOTE: Staffing and internal operations costs are not included.

Table 4-1. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Fare Collection Technology Options

Option A	2024 NTD Hours **	Percent of All NTD Hours
GoTriangle	146,063	11%
GoCary	73,052	6%
GoDurham	282,605	22%
GoRaleigh	618,864	48%
Chapel Hill Transit	167,983	13%
Total	1,288,567	100%
** Annual Vehicle Revenue Hours		

Option B	2024 NTD Hours **	Percent of All NTD Hours
GoTriangle	146,063	11%
GoCary	73,052	6%
GoDurham	282,605	22%
GoRaleigh	618,864	48%
Chapel Hill Transit	167,983	13%
Total	1,288,567	100%
** Annual Vehicle Revenue Hours		

Option C	2024 NTD Hours **	Percent of All NTD Hours
GoTriangle	146,063	11%
GoCary	73,052	6%
GoDurham	282,605	22%
GoRaleigh	618,864	48%
Chapel Hill Transit	167,983	13%
Total	1,288,567	100%
** Annual Vehicle Revenue Hours		

Note: Cost estimate splits are based upon percent of all NTD hours within region. GoTriangle hours are split 55/30/15 among counties.

Option A	Total Cost for Years 1-5
Wake County Total	\$5,570,661
GoRaleigh Estimate	\$4,464,200
GoCary Estimate	\$526,964
GoTriangle Estimate	\$579,497
Durham County Total	\$2,354,672
GoDurham Estimate	\$2,038,583
GoTriangle Estimate	\$316,089
Orange County Total	\$1,482,583
Chapel Hill Transit Estimate	\$1,211,752
OCPT Estimate	\$113,056
GoTriangle Estimate	\$158,045

Option B	Total Cost for Years 1-5
Wake County Total	\$3,829,966
GoRaleigh Estimate	\$3,069,247
GoCary Estimate	\$362,300
GoTriangle Estimate	\$398,419
Durham County Total	\$1,618,895
GoDurham Estimate	\$1,401,576
GoTriangle Estimate	\$217,319
Orange County Total	\$1,019,498
Chapel Hill Transit Estimate	\$833,109
OCPT Estimate	\$77,729
GoTriangle Estimate	\$108,660

Option C	Total Cost for Years 1-5
Wake County Total	\$4,630,344
GoRaleigh Estimate	\$3,710,652
GoCary Estimate	\$438,013
GoTriangle Estimate	\$481,679
Durham County Total	\$1,957,208
GoDurham Estimate	\$1,694,474
GoTriangle Estimate	\$262,734
Orange County Total	\$1,232,551
Chapel Hill Transit Estimate	\$1,007,211
OCPT Estimate	\$93,973
GoTriangle Estimate	\$131,367

Table 1-2. Budgetary Planning-Level Cost Estimates for Real-Time Transit Information

	Buses in Fleet	Value-Added Application per Vehicle (1)	Detour Notifications per Vehicle (2)	Service Update Alerts per Vehicle (2)	One-Time Costs (2)	Year 1 Costs	Annual Cost Estimate After Year 1
GoTriangle	82	\$300	\$550	\$290	\$405	\$126,690	\$93,480
GoCary	20	\$300	\$550	\$290	\$405	\$30,900	\$22,800
GoDurham	63		\$550	\$290	\$405	\$78,435	\$52,920
GoRaleigh	135		\$550	\$290	\$405	\$168,075	\$113,400
Chapel Hill Transit	99		\$550	\$290	\$405	\$123,255	\$83,160
						\$527,355	\$365,760
1 - Average value based upon multiple existing contracts held by Cleveland RTA, SORTA, Utah Transit Authority, and Champaign-Urbana Mass Transit District. Contract values vary based on economies of scale for larger agencies and the Transit App features purchased beyond the core offer of Royale (fare payment integrations, Passenger feedback/Rate-My-Ride, automatic detour detection & Display, APIs for web-based trip planning, push notifications, network change previews)							
2 - Values based on the listed annual price per vehicle provided from a transit vendor to Citibus in Lubbock, Texas							

Table 1-3. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Real-Time Transit Information Updates

	2024 NTD Hours **	Percent of All NTD Hours		Year 1 Total	Annual Total (Years 2-5)	Totals
GoTriangle	146,063	11%	Wake County Total	\$316,049	\$219,204	\$1,192,863
GoCary	73,052	6%	GoRaleigh Estimate	\$253,274	\$175,665	\$955,933
GoDurham	282,605	22%	GoCary Estimate	\$29,897	\$20,736	\$112,840
GoRaleigh	618,864	48%	GoTriangle Estimate	\$32,878	\$22,803	\$124,090
Chapel Hill Transit	167,983	13%	Durham County Total	\$133,591	\$92,655	\$504,213
			GoDurham Estimate	\$115,658	\$80,217	\$436,528
			GoTriangle Estimate	\$17,933	\$12,438	\$67,685
Total	1,288,567	100%	Orange County Total	\$84,129	\$58,350	\$317,528
** Annual Vehicle Revenue Hours			Chapel Hill Transit Estimate	\$68,748	\$47,682	\$259,476
Note: Cost estimate split is based upon percent of all NTD hours in region. GoTriangle hours are split 55/30/15 among counties.			OCPT Estimate	\$6,414	\$4,449	\$24,209
			GoTriangle Estimate	\$8,967	\$6,219	\$33,843

Table 2-1, below, presents an example cost estimate that assumes one (1) primary agency and five (5) additional agencies which are using a combination of the eight tools listed. The cost estimate also assumes the unified platform approach will include service planning tools currently used by at least 3 partner agencies.

Table 2-1. Cost Estimate Comparison of Multiple Service Planning Tools and Consistent Service Planning Tools

Cost Element	Separate Tools (across 6 agencies) <i>Estimated Range</i>	Unified Platform Adopted by all Agencies (same combination of tools) <i>Estimated Range</i>
Licensing & Subscriptions (Year 1)	\$470,000 – \$510,000	\$325,000 – \$490,000
Initial Training & Onboarding	\$150,000 – \$170,000	\$96,000 – \$180,000
Data Integration & Management (Annual)	\$230,000 – \$270,000	\$165,000 – \$275,000
Interagency Planning and Coordination (Annual)	\$140,000 – \$180,000	\$92,000 – \$145,000
Year 1 Total Estimated Cost	\$990,000 – \$1,130,000	\$678,000 – \$1,090,000
Annual (Multi-Agency) Cost	\$740,000 – \$800,000	\$390,000 – \$420,000

Note: Costs in this figure are aggregated and blended from a review of the USDOT ITS Costs and Benefits database available at: <https://www.itskrs.its.dot.gov/costs/>

In addition to the capital and operating costs, agencies must consider key factors such as workflow efficiency and inter-agency collaboration requirements.

Table 2-2 and 2-3 on the following page present a recommended split of the cost estimate among Wake, Durham, and Orange Counties based on a percentage of 2024 NTD hours within the region. The average amount of the range of figures provided in Table 2-1 is multiplied by the percent of all NTD hours for each agency to arrive at the totals presented in Tables 2-2 and 2-3. Note that these are planning-level cost estimates to guide Counties in planning for the two approaches described within this chapter.

Table 2-2. Wake /Durham/Orange County Split of Planning-Level Cost Estimate Under Approach #1 of Separate Tools Across All Agencies

	2024 NTD Hours **	Percent of All NTD Hours		Year 1 Total	Annual Total (Years 2-5)	Totals (Years 1-5)
GoTriangle	146,063	11%	Wake County Total	\$635,268	\$461,468	\$2,481,142
GoCary	73,052	6%	GoRaleigh Estimate	\$509,089	\$369,810	\$1,988,330
GoDurham	282,605	22%	GoCary Estimate	\$60,094	\$43,653	\$234,707
GoRaleigh	618,864	48%	GoTriangle Estimate	\$66,085	\$48,005	\$258,105
Chapel Hill Transit	167,983	13%	Durham County Total	\$268,523	\$195,059	\$1,048,758
			GoDurham Estimate	\$232,476	\$168,874	\$907,974
			GoTriangle Estimate	\$36,046	\$26,185	\$140,784
Total	1,288,567	100%	Orange County Total	\$169,102	\$122,838	\$660,455
** Annual Vehicle Revenue Hours			Chapel Hill Transit Estimate	\$138,186	\$100,380	\$539,708
Note: Cost estimate split is based upon percent of all NTD hours in region. GoTriangle hours are split 55/30/15 among counties.			OCPT Estimate	\$12,893	\$9,365	\$50,355
			GoTriangle Estimate	\$18,023	\$13,092	\$70,392

Table 2-3. Wake/Durham/Orange County Split of Planning-Level Cost Estimate Under Approach #2 of Unified Platform Adopted by All Agencies

	2024 NTD Hours **	Percent of All NTD Hours		Year 1 Total	Annual Total (Years 2-5)	Totals (Years 1-5)
GoTriangle	146,063	11%	Wake County Total	\$529,790	\$242,720	\$1,500,671
GoCary	73,052	6%	GoRaleigh Estimate	\$424,561	\$194,511	\$1,202,604
GoDurham	282,605	22%	GoCary Estimate	\$50,116	\$22,960	\$141,958
GoRaleigh	618,864	48%	GoTriangle Estimate	\$55,112	\$25,249	\$156,110
Chapel Hill Transit	167,983	13%	Durham County Total	\$223,938	\$102,596	\$634,321
			GoDurham Estimate	\$193,876	\$88,823	\$549,170
			GoTriangle Estimate	\$30,061	\$13,772	\$85,151
Total	1,288,567	100%	Orange County Total	\$141,025	\$64,610	\$399,463
** Annual Vehicle Revenue Hours			Chapel Hill Transit Estimate	\$115,242	\$52,797	\$326,432
Note: Cost estimate split is based upon percent of all NTD hours in region. GoTriangle hours are split 55/30/15 among counties.			OCPT Estimate	\$10,752	\$4,926	\$30,456
			GoTriangle Estimate	\$15,031	\$6,886	\$42,575

Table 3-3. Budgetary Planning Recommendations for Transit Agency Consideration

TSP System Approaches	Vehicle Budget Items	Intersection Budget Items	Other TSP Project Items
Use of Connected Vehicle (CV) Approach for TSP Operations	\$5,000 per OnBoard Unit (OBU) for purchase, installation, and integration with existing AVL hardware on vehicles	\$5,000 per Roadside Unit (RSU) for purchase, installation, and setup at traffic signal	\$30,000 for communications backhaul from intersections to central software. \$25,000 per year for vendor PM costs, warranty, and central software access for monitoring
Use of Existing Cloud-Based TSP Software	\$5,000 per OnBoard Unit (OBU) for purchase, installation, and integration with existing AVL hardware on vehicles	If expanding to signals outside of current deployment, \$10,000 for new equipment and integration with traffic signals	\$25,000 per year for vendor PM costs, warranty, and central software access for monitoring

Table 3-4. Planning-Level Cost Estimate for Use of Connected Vehicle (CV) Approach for TSP Operations

	Buses in Fleet	Vehicle Cost Estimate	Intersections on Transit Routes	Intersection Cost Estimate	Other TSP Project Items*	Total Costs	Notes
GoTriangle	82	\$5,000	203	\$5,000	\$55,000	\$1,480,000	Assumes 7 intersections on Western Blvd. with CV RSUs
GoCary	15	\$5,000	78	\$5,000	\$55,000	\$520,000	
GoDurham	0	\$5,000	291	\$5,000	\$55,000	\$1,510,000	Assumes all Durham buses capable of TSP
GoRaleigh	135	\$5,000	506	\$5,000	\$55,000	\$3,260,000	Assumes 7 intersections on Western Blvd. with CV RSUs
Chapel Hill Transit	99	\$5,000	87	\$5,000	\$55,000	\$985,000	
* See notes in Table 3-3 above.						\$7,755,000	

Table 3-5. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Connected Vehicle (CV) Approach for TSP Operations

	2024 NTD Hours **	Percent of All NTD Hours		County Estimates with Transit Agencies	Totals	Notes
GoTriangle	146,063	11%		Wake County Total	\$4,647,646	Five-year total amount
GoCary	73,052	6%		GoRaleigh Estimate	\$3,724,517	
GoDurham	282,605	22%		GoCary Estimate	\$439,650	
GoRaleigh	618,864	48%		GoTriangle Estimate	\$483,479	55% of GoTriangle NTD Hours
Chapel Hill Transit	167,983	13%		Durham County Total	\$1,964,521	Five-year total amount
				GoDurham Estimate	\$1,700,805	
Totals	1,288,567	100%		GoTriangle Estimate	\$263,716	30% of GoTriangle NTD Hours
** Annual Vehicle Revenue Hours from 2024 NTD Reporting				Orange County Total	\$1,237,156	Five-year total amount
Note: Cost estimate split is based upon percent of all NTD hours within region. GoTriangle hours are split 55/30/15 among counties.				Chapel Hill Transit Estimate	\$1,010,974	
				OCPT Estimate	\$94,324	
				GoTriangle Estimate	\$131,858	15% of GoTriangle NTD Hours

Table 3-6. Planning-Level Cost Estimate for Use of Existing Cloud-Based TSP Software

	Buses in Fleet	Vehicle Cost Estimate	Intersections on Transit Routes	Intersection Cost Estimate	Other TSP Project Items*	Total Costs	Notes
GoTriangle	82	\$5,000	140	\$10,000	\$25,000	\$1,835,000	Intersection total accounts for signals in Durham and Cary areas already equipped for TSP.
GoCary	15	\$5,000	0	\$10,000	\$25,000	\$100,000	5 buses already using TSP. Intersections in Cary ready for cloud-based TSP.
GoDurham	0	\$5,000	0	\$10,000	\$25,000	\$25,000	Assumes all Durham buses capable of TSP
GoRaleigh	135	\$5,000	497	\$10,000	\$25,000	\$5,670,000	Intersection total accounts for 16 signals on New Bern with cloud-based TSP
Chapel Hill Transit	99	\$5,000	87	\$10,000	\$25,000	\$1,390,000	
* See notes in Table 3-3 above						\$9,020,000	

Table 3-7. Wake/Durham/Orange County Split of Planning-Level Cost Estimate for Use of Existing Cloud-Based TSP Software

	2024 NTD Hours **	Percent of All NTD Hours		County Estimates with Transit Agencies	Totals	Notes
GoTriangle	146,063	11%		Wake County	\$5,405,773	Five-year total amount
GoCary	73,052	6%		GoRaleigh Estimate	\$4,332,063	
GoDurham	282,605	22%		GoCary Estimate	\$511,366	
GoRaleigh	618,864	48%		GoTriangle Estimate	\$562,344	55% of GoTriangle NTD Hours
Chapel Hill Transit	167,983	13%		Durham County	\$2,284,975	Five-year total amount
				GoDurham Estimate	\$1,978,242	
Totals	1,288,567	100%		GoTriangle Estimate	\$306,733	30% of GoTriangle NTD Hours
** Annual Vehicle Revenue Hours from 2024 NTD Reporting				Orange County	\$1,438,962	Five-year total amount
Note: Cost estimate split is based upon percent of all NTD hours within region. GoTriangle hours are split 55/30/15 among counties.				Chapel Hill Transit Estimate	\$1,175,885	
				OCPT Estimate	\$109,710	
				GoTriangle Estimate	\$153,367	15% of GoTriangle NTD Hours