

TRANSPORTATION STUDY SCOPE OF SERVICES

1.0 SCOPE OF WORK

Task 1: Project Initiation

RSG will attend a kick-off meeting with Burlington Planning & Zoning Staff to review this scope of work, the project schedule and deliverables. At this meeting, we will begin to identify participants for the stakeholder forum. We will also identify plans and studies that are to be reviewed for the parking and circulation synthesis in Task 2.

Task 1 Deliverables

- Deliverable #1 – Kick-Off Meeting Notes

Task 1 Meetings

- Meeting #1 – Project Kick-off

Task 2: Synthesize Prior Plans and Studies

The City has sponsored many parking and circulation studies over the past 10 years. Combined with studies conducted by other entities, such as the Hill Institutions and the private sector, there is an invaluable storehouse of information this study can draw upon. Thus, as a first step in this study we propose to synthesize prior plans and studies, focusing on the key findings and recommendations of that work. The synthesis will not only review and summarize the findings of these documents, but describe how they are significant and relevant to this project. The synthesis ensures that the most important aspects and contributions of these documents are carried forward and truly understood, as opposed to simply noting their findings.

Virtually all of the City's transportation studies over the past 10 years sound a steady theme of a multimodal transportation system serving intensive, mixed use development. The need to support vibrant alternative transportation networks is stressed over and over again. Thus, the City has already made the decision to invest in alternative transportation to serve its land use vision. **The goal of this task is to identify the best policies and investments for advancing infill development.**

A partial listing of the studies (many of which RSG has led or participated in) to review for the synthesis includes:

- Burlington Transportation Plan (2010)
- CCTA Transit Development Plan (2010)
- Waterfront North Scoping Study (RSG - 2010)
- Waterfront South Access Study (RSG - 2010)
- Joint Institutional Parking Management Plan (RSG -2010)
- Downtown Burlington Retail Observations (2008)
- Market Transportation Study for Downtown Burlington (2006)
- Chittenden County Park & Ride Plan (2004) and the 2011 update (Draft Report - RSG March 2011)
- Burlington Parking Study Final Report (2003)¹
- Downtown Retail Feasibility Study (2002)

Task 2 Deliverables

- Deliverable #2 – Synthesis Paper on Parking and Transportation Recommendations

Task 2 Meetings – none

¹ RSG's Joe Segale, the senior advisor to our project team, was the author of this report.

Task 3: Existing Conditions Analysis: Parking & Circulation

While Task 2 will gather, summarize, and synthesize the wealth of data and information that already exists in plans and studies, Task 3 will verify and update existing conditions as needed.

In the 2003 *Downtown Burlington Parking Study*, a detailed parking accumulation count was conducted from 7AM-10PM on Friday and from 10AM-6PM on Saturday. These days were identified as peak parking demand days by prior studies.

We will replicate the days and hours of this study within the current project for those “parking zones” outside of the 2003 study, namely:

- North of Pearl Street, Battery to Winooski
- Main to Maple, Battery to Winooski
- Waterfront, north of College
- Waterfront, south of College

Data on the number of parked vehicles (relative to a maximum number of parked vehicles), by location within each parking zone, will be collected approximately hourly by crews of 2 people (1 driver, 1 observer). Data will be assembled by location (e.g. On-Street: North Street, North Avenue to Park Street) and by type – on street, surface lot, and structured. For publicly-managed parking facilities, we will obtain the occupancy data directly from the City of Burlington rather than count these facilities. For private parking facilities, surface lots or structure lots, we will obtain owners’ permission for conducting the counts prior to the data collection days.

For the Downtown Core, which was thoroughly counted in the 2003 study, we recommend that only the peak periods be counted. We estimate this to encompass 6 hours on Friday and 4 hours on Saturday. Based on prior experience, the Friday count will likely occur in two 3-hour segments, encompassing the mid-day period (11AM-2PM) and the late afternoon/early evening. The new data collection for the Downtown Core will be used to validate the 2003 data and to determine whether any new use patterns have developed since that time.

Using all data sets we will provide a zone-by-zone analysis of parking accumulation and availability and an overall analysis for the entire study area. The objectives of the analysis are to specify areas of parking surplus and constraint. This analysis will, in turn, provide a foundation for the Build Out analysis conducted within the Future Conditions Task and will identify future locations where parking scarcities/surpluses can be anticipated and should be planned for within this study.

This analysis will also inform the analysis parking regulations to be conducted by VTPI.

Along with this intensive parking occupancy analysis, we will be mapping current parking cost information for public and private parking lots/structures, as well as on-street parking. In addition, an analysis of the remaining lifetime of existing City-owned parking structures will be conducted.

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To illustrate existing conditions and facilities for each transportation mode (private vehicles, transit, bicycles, pedestrians, and delivery trucks), GIS (augmented with information from other sources, including recent studies conducted as part of Task 2 (Synthesize Prior Plans and Studies) will be used to develop a multimodal base map. The map will:

- Identify movement patterns and facilities for each mode
- Identify intermodal connection points
- Identify safety hot spots/zones
- Identify gaps in system efficiency

A key analysis that we propose to do is a **Connectivity Analysis** for Bicycle and Pedestrian networks. Thus, a critical output of our circulation analysis is to highlight bicycle and pedestrian linkages that need to be established in the future.

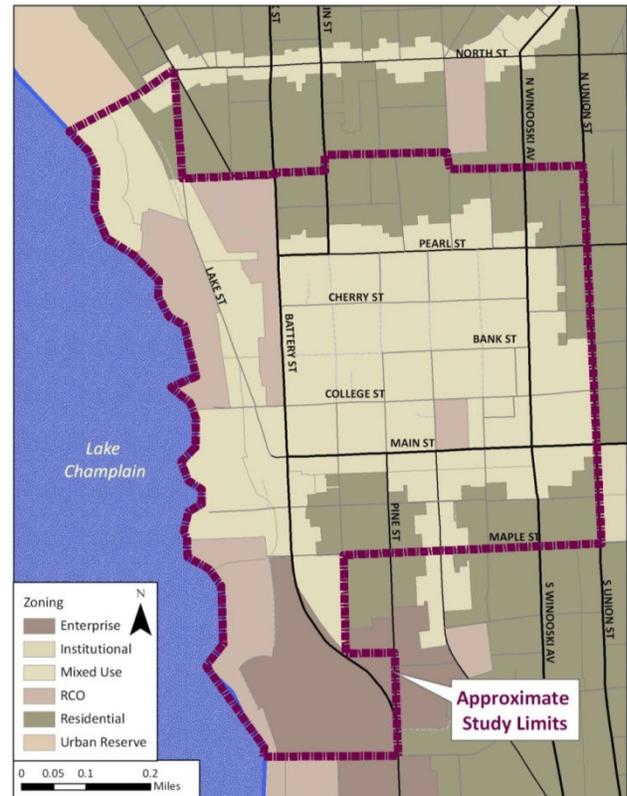
Task 3 Deliverables

- Deliverable #3 – Existing Conditions PowerPoint Presentation
- Multimodal Base Map

Task 3 Meetings

- Meeting #2 – present Task 2 Synthesis and Existing Conditions to Planning & Zoning Staff

Figure 1: Downtown zoning areas



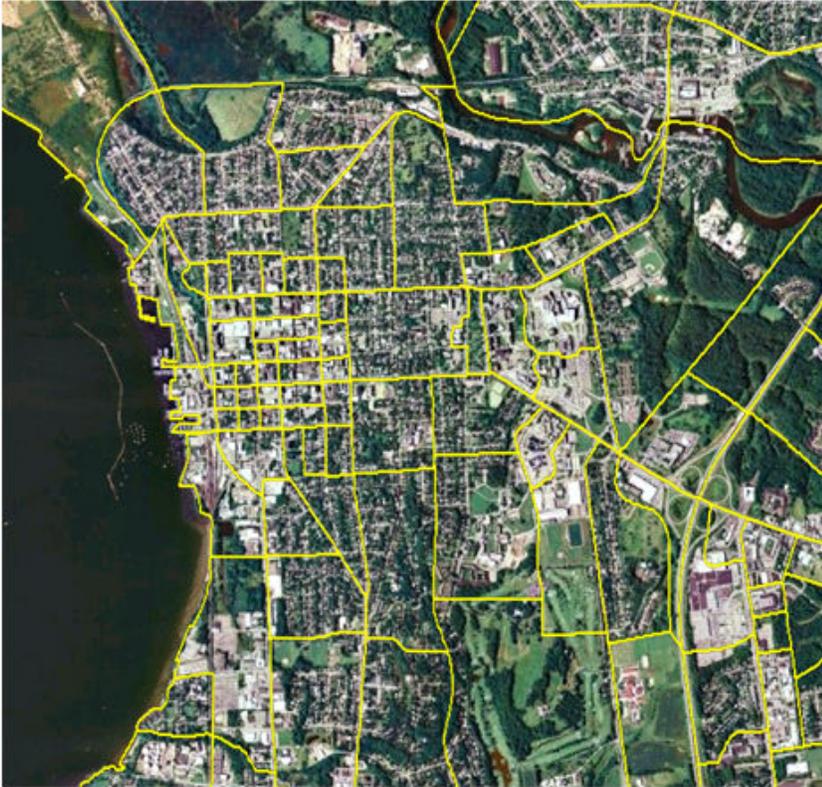
Task 4: Future Conditions Analysis: Parking & Circulation

A circulation study is, on its own, a major undertaking. In our opinion, to be done well, a circulation study using an **integrated land use-transportation microsimulation model** is the most appropriate tool to support this type of master planning effort. The cost of developing this type of planning model, given prior efforts, is around \$50,000. For this reason we have not considered this as a viable option for this planning study.

The next best approach for conducting the circulation analysis is to use the CCMPO's Travel Demand Model (v 3.2), developed by Resource Systems Group. This model is a regional model representing the entire CCMPO region, but has significant detail within the study area (Figure 2).

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Figure 2: Burlington Area TAZ Structure



We propose to use the CCMPO model to evaluate two critical features of this planning project:

1. Downtown Build-Out (being conducted under a separate project)
2. Parking Lot Location and Parking Pricing Strategies

Thus, the data collection performed for the parking analysis in Task 3 would support the use of this model. The other data necessary to use this model are from the Build Out Analysis, which would provide the amount, type, density, and location of development within the study area. These data would be input to the Land Use file of the model, after which the model would be run to obtain the following performance measures:

1. Change in daily traffic volume on the six key urban arterials serving the downtown/waterfront:
 - a. North Avenue
 - b. US 7/Shelburne Road
 - c. Pine Street
 - d. Main Street/US 2
 - e. Colchester Avenue
 - f. Riverside Avenue
2. Change in travel delay (a function of the volume/capacity ratio) for each of the six arterials.
3. Analysis of origins and destinations of downtown traffic.

For the circulation analysis, the Build Out will provide a Base Case. We will develop two alternative scenarios, consisting of a mix of new parking inventory and parking incentives (e.g. pricing) to compare against the Base Case. Examples of an alternative scenario would run the Build Out land use with new parking at the South End Transit

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Center and at the proposed Exit 14 intercept lot. Additional parking needs will be identified through the modeling process. This is a key and critical use of this tool: to inform a future parking plan to support the downtown Build Out.

The model can evaluate changes in parking pricing as well as changes in parking supply and location. For example, employers could charge employees for a parking spot rather than guaranteeing one, or offer employees an incentive to forego their guaranteed spot. In either case the increased cost (or foregone incentive) associated with parking can be modeled as an increase in the terminal time in the TAZ of interest.

The CCMPO model includes a general parking reallocation procedure which handles both parking reallocation in the downtown and the implementation of shuttle lot facilities. This procedure identifies groups of TAZs that functionally share parking as “parking zones”. This is important because, in a downtown area, travelers do not always park in the same TAZ as their destination, but may park in an adjacent TAZ and walk. The number of spaces available in each TAZ is the key input to this analysis, and the procedure reallocates the trips destined for that parking zone to the TAZs, in proportion to the number of available parking spaces (note that this does not prohibit more parking than the available spaces entered in the table).

Shuttle lot facilities may be included in the model using this reallocation procedure. If a set of downtown TAZs, for example, will have a certain fraction of their employees park in a satellite lot and take a shuttle to the place of employment, the employment TAZs and the satellite lot TAZ would be identified as a new parking zone, with the number of parking spaces available in each TAZ set to reallocate the desired fraction of downtown employees parking to the satellite lot. The best practice would be to create a new TAZ representing only the satellite lot.

The question “to what extent is the circulation analysis taking into account measuring traffic that is primarily cruising for parking vs. other traffic?” is an important one. It is inarguable that people contribute to congestion while searching for parking. Rather than trying to quantify this effect within this planning study, we recommend that we acknowledge that this is an impact that should be minimized. The best way to minimize this type of traffic impact, now and in the future, is to provide broadly available real-time information to the public on the location of available parking.

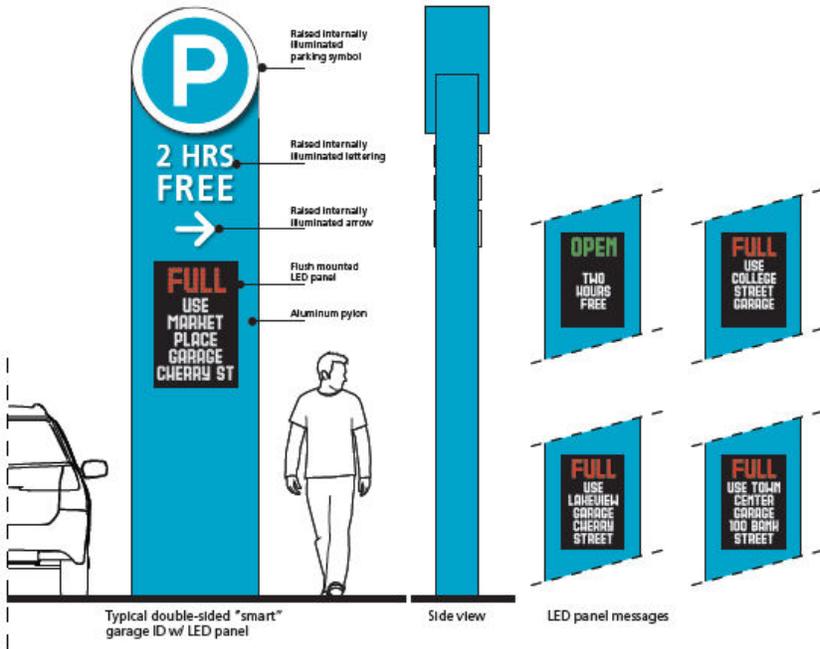
Through RSG’s work on the Waterfront design and Wayfinding projects, we have designed a Smart Parking system. This system provides on street dynamic message signs informing the traveling public at key locations of the availability of parking in various City-managed parking lots/structures (Figure 3). The City is beginning to implement this system. Current design projects on the waterfront and Church Street are incorporating Smart Parking infrastructure. We recommend that the City continue to pursue full implementation of this Smart Parking infrastructure. It is the best way to minimize congestion resulting from the “pursuit of parking”.

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Figure 3: Parking Wayfinding System Proposed for Burlington

CONCEPTUAL DESIGN - PARKING GARAGE SIGNS

Freestanding Identification Sign



Sketch Simulations of Parking Garage Identification/Visibility Improvements

Shown at Marketplace Garage Bank Street entrance
Approximate and conceptual only



Task 4 Deliverables

- Deliverable #4 – Analysis of Base Case/Build Out and Two Alternative Scenarios Based on CCMPO Model results

Task 4 Meetings – none

Task 5: Parking Ordinance and Policy Review

The purpose of this task is to identify what ordinances and policies should be implemented in order to advance alternative transportation solutions to support infill development.

5A. Parking ordinance and policy analysis

VTPI will review Burlington’s parking ordinance and offer a critique in light of best management practices and techniques to encourage infill development. This critique will seek to answer the question: what ordinances and policies are necessary to realize the City’s land use vision? We refer to this as a “policy gap analysis.” The deliverable resulting from this analysis will be provided to the stakeholder forum (Task 6) as preparation for that meeting.

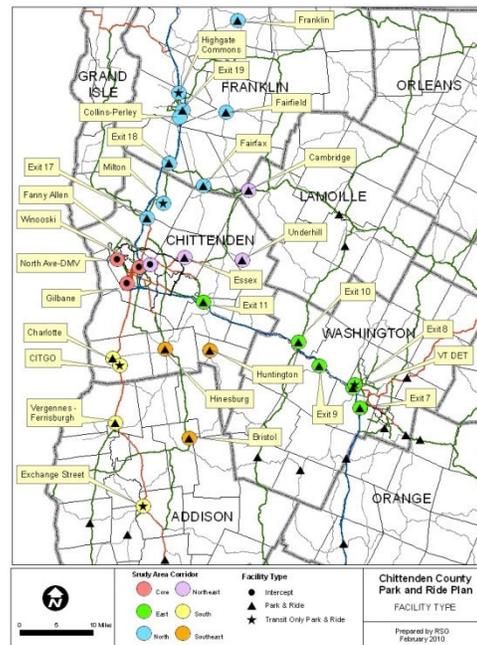
VTPI will look at all factors affecting parking supply, demand, and management. This will include a critical review of current Burlington ordinances, how they compare with other communities and current trends in parking regulations, and the degree that they support or contradict strategic planning objectives.

For example, if the City has objectives to encourage smart growth land use development, more affordable infill development, or use of alternative modes, it is important that parking regulations incorporate adjustment factors that support parking management strategies such as sharing, use of off-site overflow parking, cashing out, unbundling, carsharing, bicycle parking, transit-oriented development, commute trip reduction programs, and more compact and mixed land use development. VTPI will also investigate the City’s institutional capacity to support and implement more flexible parking requirements and parking management strategies.

5B. Identify innovative strategies and solutions

VTPI’s experience and expertise in transportation and parking demand management will be tapped to compile a list of innovative strategies and solutions that are feasible for Burlington. This list will be presented to the convened forum Task 6 for reaction and discussion. These practices will include:

- Transportation Demand Management (TDM) measures
- Shared parking
- Parking maximums
- Intercept and Park&Ride lots
- Parking and walkability
- Transportation Management Associations (TMAs) and parking brokerage
- Increasing existing capacity
- Bicycle parking
- CarShare parking



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Our unique contribution is to be able to identify a broad range of potential parking management strategies and be able to link them to appropriate parking policy reforms, so for example, if the City wants to reduce the number of parking spaces needed at a particular location, we can identify the policy changes that will be needed to allow this to occur.

Task 5 Deliverables

- Deliverable #5 – Gap Analysis of Parking Ordinances and Policies, Best Practices

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Task 5 Meetings – none

Task 6: Convene Forum

Prior to the stakeholder forum, the following project materials will be provided to the forum participants for their review and comment:

- Deliverable #2 – Synthesis Paper on Parking and Transportation Recommendations
- Deliverable #3 – Existing Conditions PowerPoint Slides
- Deliverable #4 – Analysis of Base Case/Build Out and Two Alternative Scenarios Based on CCMPO Model results
- Deliverable #5 – Gap Analysis of Parking Ordinances and Policies

This task will begin with a meeting of Planning & Zoning Staff, RSG, and VTPI to discuss the Ordinance and Policy Review from Task 5 and to prepare for the convened forum. The forum will be assembled from the development experts, downtown business owners, and planners identified in Task 1. The forum will be facilitated by VTPI and RSG. The purposes of this task are to:

1. Identify parking barriers to infill development and issues and gaps.
2. Discuss innovative transportation and parking solutions to achieve infill development.
3. To get stakeholder reaction and feedback to the Ordinance and Policy Review from Task 5.

Additionally, the discussion is expected to:

1. Plant seeds for future public-private partnerships
2. Identify potential locations for additional/new parking capacity

Task 6 Deliverables

- Deliverable #6 –Forum Notes

Task 6 Meetings

- Meeting #3 – Meet with Planning & Zoning Staff to prepare for convened forum; to present Future Parking Conditions (Deliverable #4); and to review Analysis of Parking Ordinances and Policies, Best Practices, Gap Analysis (Deliverable #5).
- Meeting #4 – Convened Forum

Task 7: Develop Recommendations for Parking and Circulation

Tasks 2, 5, and 6 in particular will feed the recommendations. We anticipate that the parking recommendations will focus on 1) opportunities for the City Parking Ordinance to support infill development, and 2) parking pricing strategies, but we will await the results of the convened forum in order to assemble a wide spectrum of options.

Parking recommendations will include:

- Potential locations for additional/new parking capacity (including intercept/Park&Ride facilities and associated transit connections); and
- Ways that parking can encourage pedestrian circulation.

As with the parking recommendations, we will first hear what the convened forum has to say but we expect that the circulation recommendations will center on movement patterns and intermodal connectivity.

To support the recommendations, an implementation plan will be developed to estimate costs and identify funding strategies and potential public/private partnerships.

Task 7 Deliverables – none (recommendations will be provided in Draft Report within Task 8)

Task 7 Meetings– none

Task 8: Prepare Parking and Circulation Report and Presentation

RSG will compile the deliverables of the previous tasks into a draft report for presentation to Planning & Zoning Staff. Input and feedback from Staff will be used to revise the draft into a final report. An annotated presentation will also be prepared for Staff to share findings with stakeholders.

Task 8 Deliverables

- Deliverable #7 – Draft Report
- Deliverable #8 – Final Report
- Deliverable #9 – Annotated Presentation

Task 8 Meetings

- Meeting #5 – Review of Draft Report with Planning & Zoning Staff

2.0 LABOR HOURS

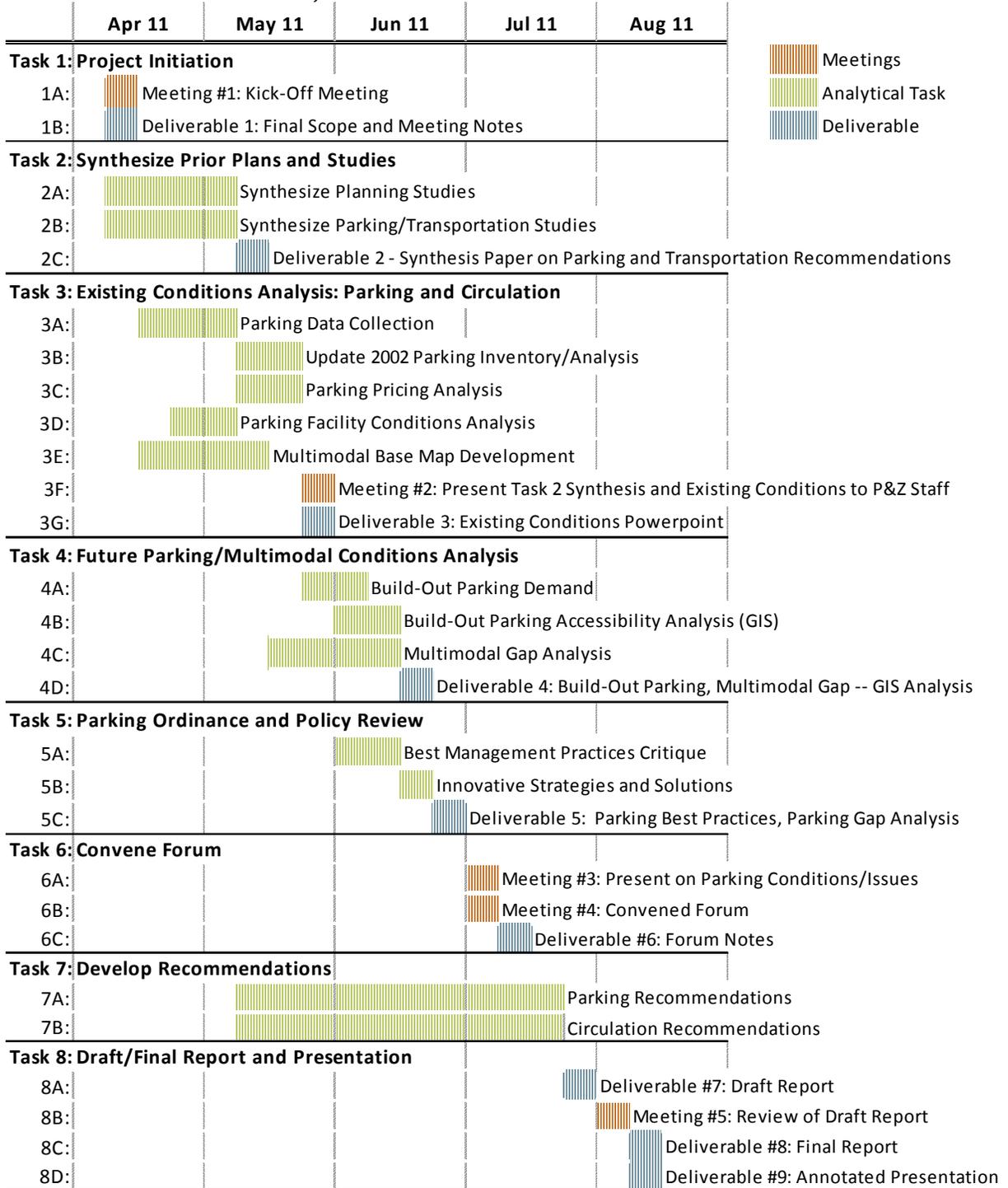
Hours by task for each person are presented in Figure 4.

Figure 4: Labor Hours by Task

	Resource Systems Group			Victoria Transport Policy Institute	Hours/ Task
	Joe Segale, PE/PTP	Beth Isler, PE/PTP	Fang Guan	Todd Litman	
Task 1: Project Initiation	2	3	0	0	5
Task 2: Synthesize Prior Plans and Studies	1	56	0	0	57
Task 3: Existing Conditions Analysis: Parking and Circulation	6	39	80	2	127
Task 4: Future Conditions Analysis: Parking and Circulation	3	48	112	0	163
Task 5: Parking Ordinance and Policy Review	1	3	0	24	28
Task 6: Convene Forum	6	8	0	18	32
Task 7: Develop Recommendations	2	20	0	4	26
Task 8: Draft/Final Report and Presentation	3	30	16	2	51
Hours Per Staff Total	24	207	208	50	489

3.0 PROJECT SCHEDULE

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Schedule