

# appendix



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# planning process

This section documents key aspects of the process for developing the *Ascend Lebo* comprehensive plan.

- Mt. Lebanon's Board of Commissioners adopted this comprehensive plan in January 2024 by resolution.
- The plan's visions, priorities and strategies arose from public input collected through numerous channels between July 2022 and December 2023. As summary of the input mechanisms appears in this section.



# summary of public input

The planning process played out across three phases:

## *Explore*

July 2022 - January 2023

This initial phase of inquiry and evaluation focused on intensive public engagement. The project team launched *ascendlebo.com*, a digital clearinghouse for information and interactive activities. Residents contributed more than 3,000 points of input across responses to an initial brief survey, a more in-depth survey, an online map, and conversations at numerous community events. This phase also involved field work, analysis of past plans, and stakeholder interviews.

## *Test*

February 2023-May 2023

During the second phase, the planning team focused on learning which types of strategies would best address what the community said it would like to see happen. This involved analyzing inputs collected so far, translating this into draft visions, policies and strategy ideas, then ground-truthing and workshopping the results. This workshopping included multiple meetings of three advisory groups (resiliency, engagement and mobility), and a round of topic-specific surveys that drew hundreds of responses. A group of community liaisons received updates to convey back to their boards and organizations and provided guidance.

## *Build*

June 2023-October 2023

The final planning phase centered on building research and support to fine-tune the recommendations for the report and best position them for successful implementation. This involved engaging senior municipal staff, the topic advisory groups, and at some public events.

The next pages explain the public input that occurred during each of these phases.



## EXPLORE PHASE

### Review of previous plans

An early step in this comprehensive plan process included reviewing recommendations from previous planning projects:

- 2000 Mt. Lebanon Comprehensive Plan
- 2012 Community Survey
- 2013 Comprehensive Plan
- 2018 Destination Downtown plan for Central Business District improvements
- 2021 Project Prioritization and Implementation Plan
- 2022 Park Master Plan and Recreation Center Feasibility Study
- Annual status updates on 2013 Comprehensive Plan implementation
- 2023 Uptown Design Guidelines

Mt. Lebanon has a strong record of implementing recommendations from its plans. Many of the recommendations from the plans listed above align with current interests, as revealed by an extensive public input process for the 2023 Comprehensive Plan. These include investments in the "charm" of the community, connectivity/walkability, the tree canopy, and parks and recreation facilities.



*The project kicked off in Summer 2022 with a full day of field observations and stakeholder meetings.*

## Stakeholder interviews

The consulting team interviewed about 15 community leaders and key stakeholders.

- Mt. Lebanon Commissioners
- Library director
- Outreach Teen & Family Services director
- CEO, St. Clair Health
- MTLSD superintendent
- Rep. Dan Miller
- MTLSD school board leadership
- Mt. Lebanon Nature Conservancy
- Mt. Lebanon Partnership director
- Real estate professionals
- Duquesne Light

Here is a summary of their input into what are important strengths to build on or problems to solve in the next 10 years:

### Strengths

- |                                      |                      |
|--------------------------------------|----------------------|
| • Public safety                      | • Sense of community |
| • Mobility and active transportation | • Municipal services |

### Areas of potential improvement

- Mobility and active transportation (continue to maintain roads well; lean in to pedestrian safety)
- Resilience and climate adaptations (continue to invest in green solutions to stormwater)
- Sense of community (barriers to developing a sense of belonging)
- Housing mix (more homes for elderly who age out of their houses, more at an affordable "sweet spot" rate for young people, more density where appropriate)

- Recreation facilities and green spaces (upgrading everything is important for maintaining Mt. Lebanon as "desirable")
- Land use, zoning and redevelopment (redo zoning map and ordinances)
- Municipal services (continue to improve communications, work hard with partner organizations, neighboring communities and regional groups)

## Initial community questionnaire

Early survey questions were very open-ended, in order to encourage wide-ranging input without boundaries:

- What do you like most about the community?
- What would you like to see change?

Over 950 people responded:

- 95% residents
- 64% property owners
- 5% work in Mt. Lebanon
- 6% business owners
- 1% visitors

Their answers lent direction to the first in-depth questionnaire.

## In-depth questionnaire

Along with the map came a survey. It carried forward some questions from the 2013 comprehensive plan public survey. It also explored themes from the initial questionnaire and other input, seeking ranking and sentiment regarding priorities.

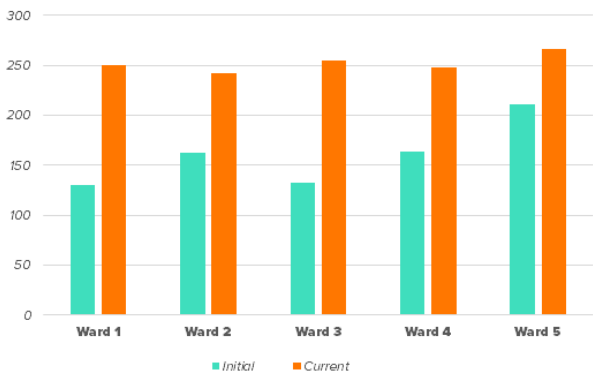
More than 1,600 people responded:

- 81% residents
- 48% property owners
- 13% work in Mt. Lebanon
- 5% business owners
- 1% visitors

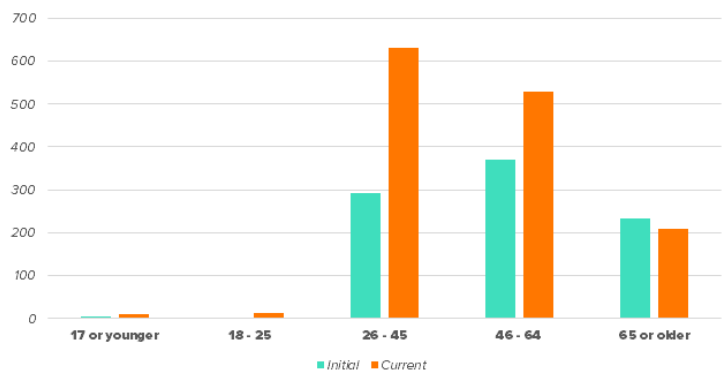
Some of the main findings from this questionnaire, which was open for over two months toward the end of 2022, in comparison to similar survey questions asked in 2012:

## Reach and representation

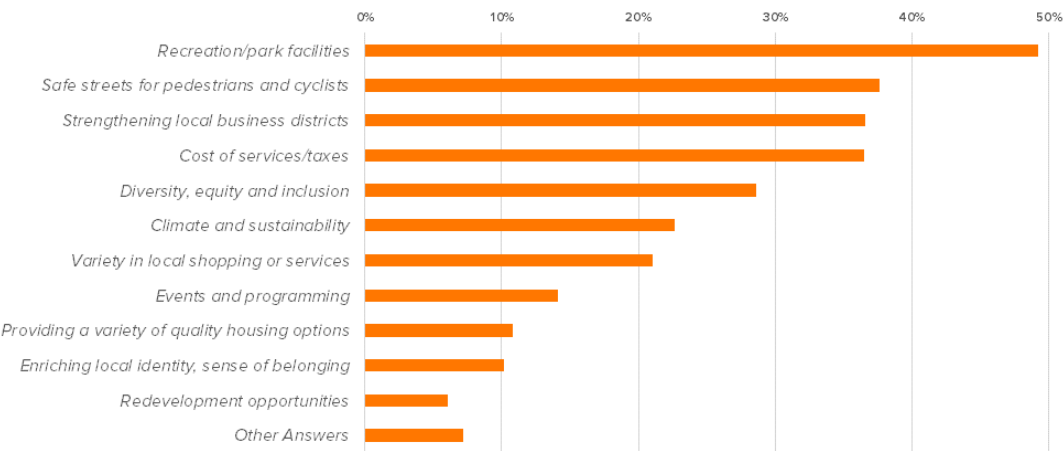
Responses by ward



Responses by age cohort

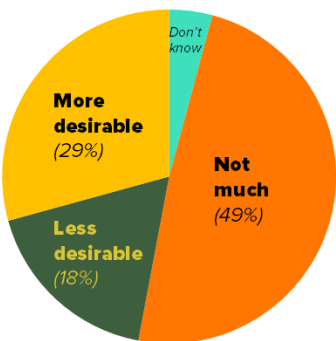


## Which of these issues should be a high priority for Mt. Lebanon to address during the next 10 years?

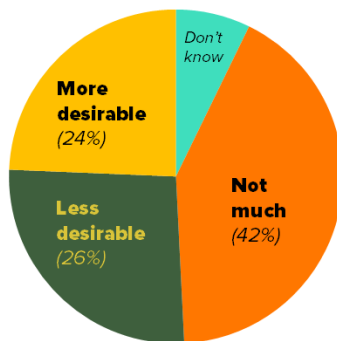


## How has Mt. Lebanon changed since you have lived/worked here? (same options)

Last Comp Plan Survey



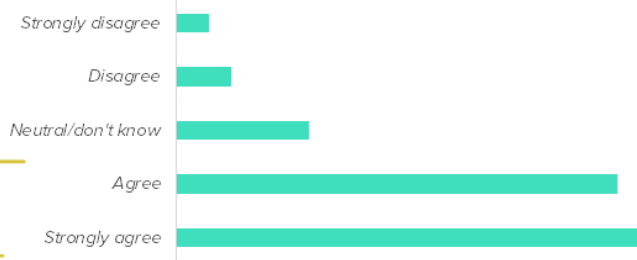
Current Comp Plan Survey



## From most popular ideas to least ...

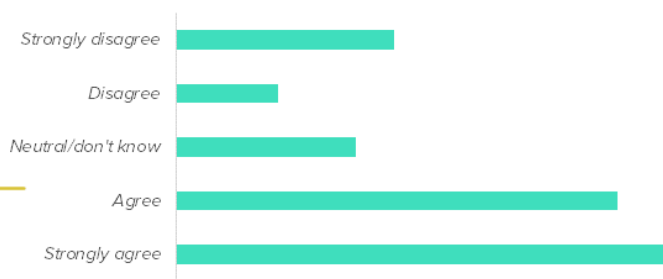
*Future development or redevelopment should respect Mt. Lebanon's historic architectural character.*

1,121



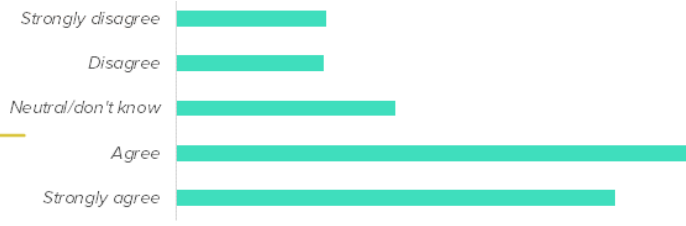
*As a community, Mt. Lebanon has a responsibility to take actions within its control to address climate mitigation, such as those that would reduce greenhouse gas emissions.*

910



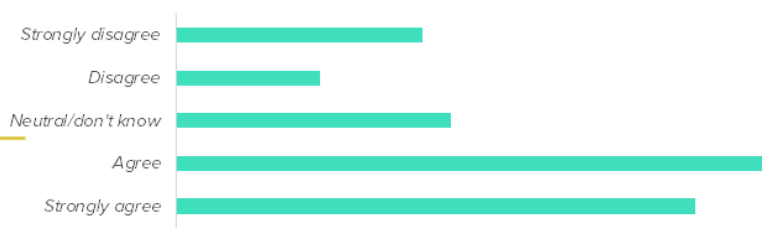
*Mt. Lebanon should offer a diverse range of housing options for people at all stages of their lives.*

904



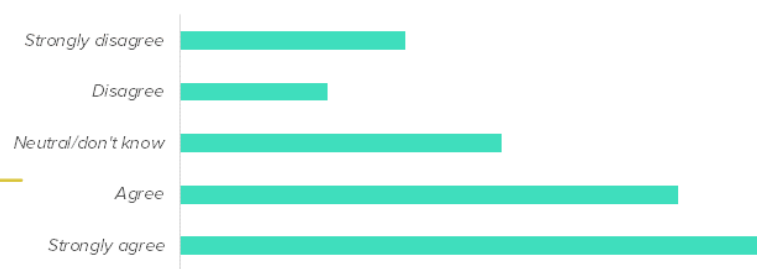
*Every home in Mt. Lebanon should be within a 20-minute walk, bike ride or transit ride of daily destinations such as grocery stores, parks, schools and services.*

869



*Mt. Lebanon should be the standard bearer among local communities on sustainability, leading innovation and progress toward ecological integrity and community resilience.*

848



*People of all income levels should be able to find a place to live in Mt. Lebanon.*

757



## From most popular ideas to least ...

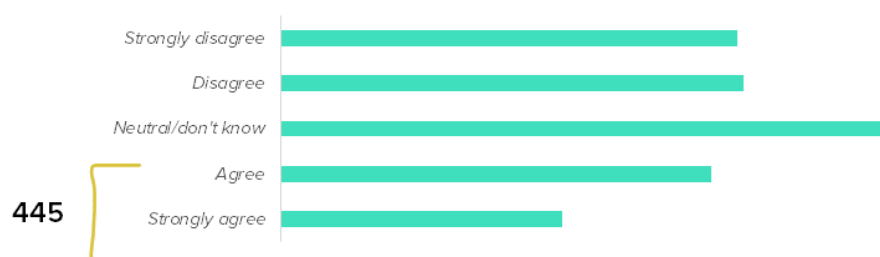
*Mt. Lebanon needs a dog park.*



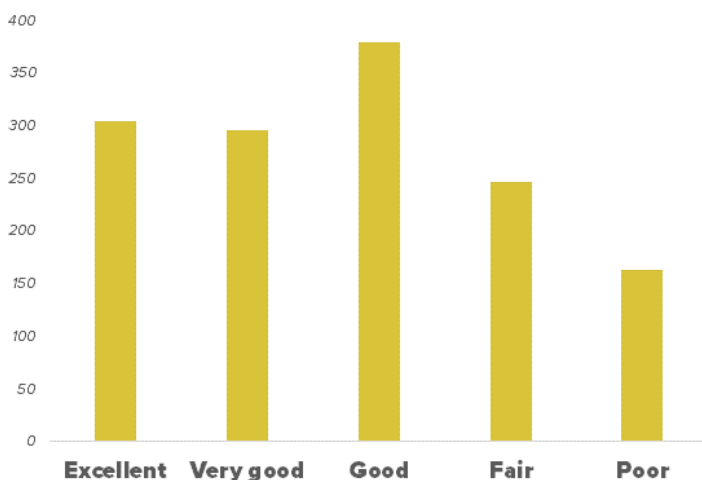
*Reconfiguring our streets to increase safety and comfort for cyclists is important, even if it requires the conversion of some streets to one-way traffic only.*



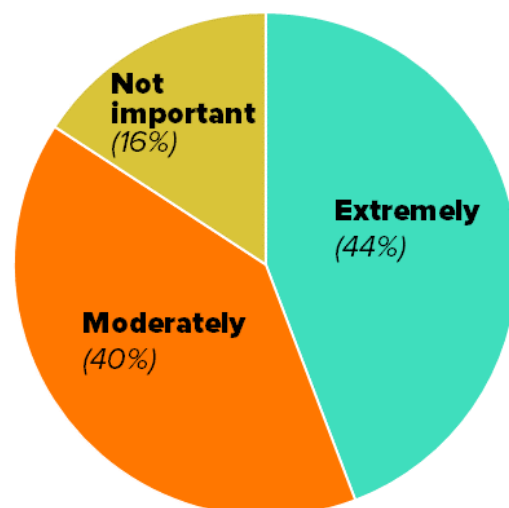
*Any redevelopment of a residential site in Mt. Lebanon should result in an equal or greater number of housing units than were there previously.*



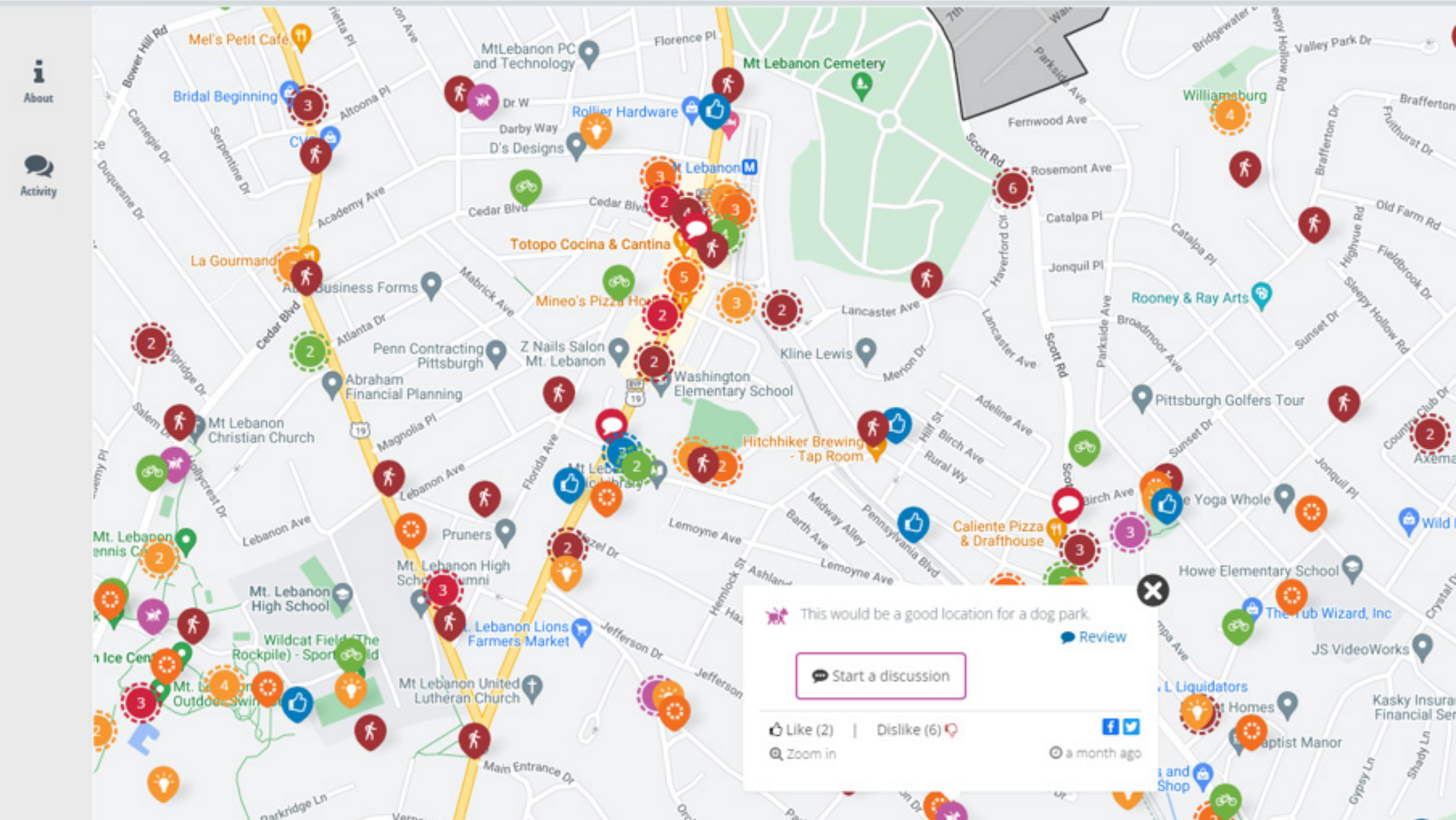
### How would you describe the quality of your walking environment?



### How important will it be during the next 10 years to close gaps in the sidewalk network?







## Interactive map

Respondents entered more than 900 pins and comments on an interactive map, suggesting favorite places, areas that represented opportunities, and/or places with perceived problems or issues. Map users were able to upvote and downvote on one another's ideas and add photos and comments for consideration.

### Points by category

|                           |            |             |
|---------------------------|------------|-------------|
| Improve walking route     | 277        | 33%         |
| Redevelop this!           | 175        | 21%         |
| Land use/development idea | 129        | 16%         |
| Improve bicycle route     | 81         | 10%         |
| Dog park idea             | 63         | 8%          |
| Other idea                | 53         | 6%          |
| Preserve this!            | 52         | 6%          |
| <b>Total</b>              | <b>830</b> | <b>100%</b> |

## Community events

During the Test phase of the planning process, the consulting team sought public opinion at these events between July and October 2022:

### Community Day, July 2022



Open-ended input:

- Pedestrian & bicycle infrastructure
- Street trees, EcoDistrict
- Pickleball, spray park, dog park

### Car Cruise, September 2022



Open-ended input:

- Dog park, rec center family gym, events, 365-day pool
- Diversity, inclusion, engagement, housing choice
- Cool shops, walkable grocery store, "streeteries"
- Pedestrian & bicycle infrastructure, right-size streets
- More trees, green spaces

### Mt. Lebanon High School Homecoming, September 2022



Open-ended input:

- Sidewalks, sidewalks, sidewalks
- Improve park facilities
- More events, engagement

### Artists Market, October 2022



Open-ended input:

- Walking routes
- Community events to reinforce what is uniquely Lebo



## Trunk or Treat, October 2022



Open-ended input:

- Sidewalk connections
- Enhance recreation facilities
- Lebo pride, sense of community

## Liaisons group meetings

A group of representing community partners and the municipality's volunteer boards met twice to hear updates on the planning process and findings so far, to provide guidance and to communicate back to their boards or organizations. These took place in October 2022, to hear results of the first six months of input-gathering, and in April 2023, during the project's Test Phase, to hear a first draft of potential recommendations.

## TEST PHASE

In Spring 2023, the main chapters of the comprehensive plan had come into focus. These emerged from months of public input indicating what were the issues that residents considered to be priorities:

- Mobility (Walkability, Bikeability, Vehicular movement, Accessibility)
- Resiliency (Environmental Sustainability, Economic Development, Historic Preservation, Trees)
- Parks and Recreation (Playgrounds, Sports Fields, Natural Areas, Green Space)
- Community Engagement (Sense of Community, Interaction with the Municipality, Inclusivity)
- Financial Management (Careful Management of Municipal Resources).

The Commission decided at this same time to realign its volunteer advisory boards to coincide with these topics.

## Topic questionnaires

To gain more detailed information about residents' priorities and opinions, three surveys were put out in the community. They attracted 1,000 total responses from 437 IP addresses.

|                      |         |
|----------------------|---------|
| Community engagement | n = 291 |
| Resiliency           | n = 299 |
| Mobility and access  | n = 419 |

Total surveys submitted as of 4/13: 1,009  
Distinct IP addresses across all topics: 437

### ***Economic Development and Resiliency***

This topic drilled down into issues of expenditures for issues like road maintenance, recycling and sustainability measures.

### ***Community Engagement***

This questionnaire explored what community activities people attend, how welcome they feel and how inclusive they think the municipality is overall.

### ***Mobility and Access***

This questionnaire collected opinions on what pedestrian improvements people feel are most important, by what means they like to move around the community, and whether they drive electric or gasoline vehicles.

### ***Focus groups***

During the plan's Test Phase, three focus groups had their first meetings to provide feedback on draft recommendations for the comprehensive plan draft chapters Economic Development / Resiliency, Community Engagement, and Mobility and Access.

The focus groups comprised people in the community, such as professionals in the topic area or local volunteers, as well as the senior staff members with the municipality. The met again during the Build Phase.

## ***Community Event***

***Earth Day, April 2023***



At this event, participants filled out a targeted survey covering "travel modes" – cycling, driving, walking –and could test ride e-bikes.

## ***BUILD PHASE***

Public input during this final phase of the planning process involved examining reactions to proposed recommendations and building a viable path forward toward future implementation.

### ***Community Events***

#### ***Uptown Unveiled, August 2023***



The purpose of this community outreach effort, at 14 months into the planning process, was to get specific feedback from residents on what they would like to see happen at the South Garage potential redevelopment site; how they would like to see Washington Road change in Uptown; a new community slogan; and ways to foster inclusion. This information would contribute to the plan's Resiliency, Mobility and Engagement chapters.

#### ***Artists Market, October 2023***



At this event, residents further helped to home in on characteristics of the community that could inform selecting a new slogan for the municipality to update the old one, "A Community with Character."

### ***Parks & Recreation chapter review***

Because fresh public input in 2021-22 informed the 2022 Parks Master Plan and Recreation Center Feasibility Study, no focus group was created for this topic, to avoid duplication of effort. Instead, a draft of the Parks and Recreation chapter, rooted in the 2022 study, was distributed to the Sports Advisory Board, Parks Advisory Board and board members of Mt. Lebanon Nature Conservancy. Several individuals responded to share suggestions, and the Parks Advisory Board submitted feedback in writing.

### ***Commission updates***

The Commission hosted presentations about the comprehensive plan during each of the Explore, Test and Build phases, with the final one in October 2023.

### ***Planning Board review***

The Planning Board received regular updates on the plan's development and held an in-depth plan workshop in October 2023.

# resiliency

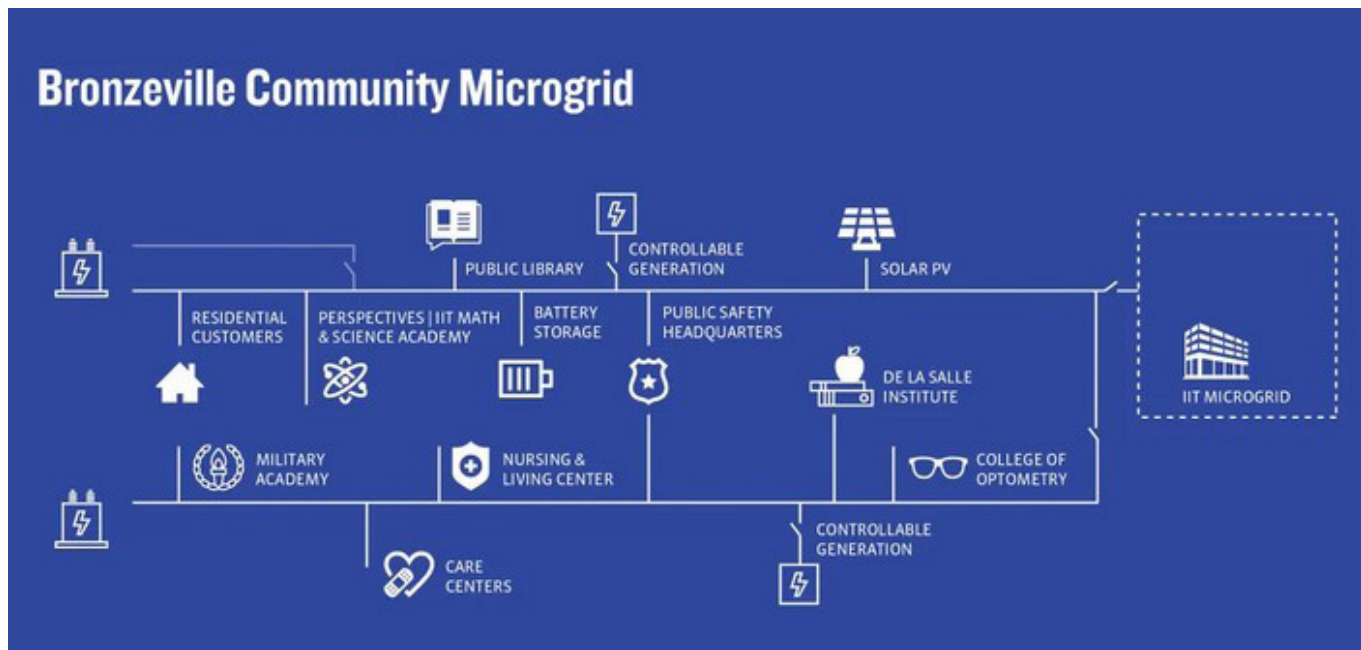
This section provides additional detail for recommendations in the "Resiliency" chapter of the *Ascend Lebo* comprehensive plan.

# community microgrids

## *What is a community microgrid?*

It is a system of electricity generators, storage batteries and controls that can power residences and facilities – including emergency shelters, hospitals and nursing homes – when the larger electric grid fails. Hyper-locally generated power and regular grid power is stored in an array of battery storage structures in the community. During a power interruption, the microgrid area consumes electricity from the storage batteries and from the hyper-local generators, such as rooftop solar arrays or electric vehicles returning power to the grid. The microgrid should detach and reattach to the larger electric grid seamlessly and be able to start up during a blackout.

This diagram from Commonwealth Edison shows how a community microgrid nearing completion in Bronzeville, IL, a neighborhood of Chicago, is being structured and how it will integrate with an existing microgrid serving Illinois Institute of Technology.



ComEd



### ***Who creates a microgrid?***

A local entity and electric company work together. The local entity can be a single facility such as an industrial plant, a university campus, a transportation hub (e.g. airport, transit center) or a development site (e.g. the Navy Yard in Philadelphia) whose continuing operations are critical, or it can be a single municipality, a neighborhood within a large city, or a group of small communities.

### ***Is it legal in PA?***

Community microgrids may be created under Pennsylvania law; however, because utilities operating in the state cannot own their electricity supply, they have less financial incentive to invest in the infrastructure of a microgrid.

Still, if an entity such as a municipality or multi-municipal group wanted to create a microgrid, it would need to demonstrate (with a partner utility) to the Department of Public Utility Control (DPUC) that the microgrid would constitute an improvement to the existing electrical system, and win DPUC approval to proceed.

### ***Microgrid benefits include:***

- During a power grid interruption, the utility company does not have to supply electricity to the microgrid locale because it has its own power.
- During a power grid interruption, the community with the microgrid can keep functioning.

### ***Microgrid challenges include:***

- Can power be generated locally via rooftop solar or other sources? Any microgrid installation would need to reflect whether there is or could be sufficient hyper-local generation to operate the microgrid during an interruption. This photo shows some rooftop solar in Bronzeville, IL, a neighborhood of Chicago that is a microgrid location.



ComEd



*Public Service Electric and Gas Co.*

- **Where can the battery storage structures located?** They can be big. The photo above shows the battery structures and part of the solar farm installed for a microgrid in New Jersey that powers a water plant.
- **Who pays for the microgrid?** It costs tens of millions of dollars to build a storage facility, create sufficient local power generation, and build, install and operate the controls. With little built-in financial incentive for a utility company to participate, the lead entity would likely need to assemble financing. It is possible that federal dollars could be available that could potentially enable the utility company to recoup costs.
- **Is the technology there?** Since microgrids are currently being operated around the country, the quick answer is yes. However, battery technology is still improving. Moreover, batteries currently are very expensive and getting more costly. Advance metering infrastructure is needed throughout the microgrid area and will need to be installed if it is not already. Also, the operational controls for a microgrid are very challenging.
- **Community-wide vs. targeted locations?** Multi-tenant microgrids – meaning those with multiple locations receiving power – are very complex and difficult because of a need to carry power across roads and to integrate old and new transmission and other infrastructure. Because of this, some microgrids focus on emergency services only. For example, Atlantic City, NJ, is creating a microgrid – post Super-storm Sandy – to serve a compactly located set of buildings (a hospital, convention center and numerous hotels) where people could receive care and take shelter.

### ***Any next steps?***

A potential next step would be for a municipal entity or multi-municipal entity to determine if federal funding is available to hire a microgrid consulting firm to produce a level 1 feasibility study. This would be done through an intergovernmental agreement, such as between the municipality and school district or a larger group.

Tax credits offered through the Infrastructure Investment and Jobs Act might provide funding, and FEMA BRIC could be appropriate if resiliency is an issue or being solved due to a specific type of threat. Contact Jeff Morris [Jeff.Morris@se.com](mailto:Jeff.Morris@se.com) or Mona Sheth [Mona.Sheth@se.com](mailto:Mona.Sheth@se.com) at Schneider Electric.



# fleet electrification

*Adapted by the consulting team from: Gahlaut, Shapiro, 2023, Technical Paper-How Cities and Counties Can Electrify Their Fleets, RMI*

## Setting the stage with policies and process

### **Convene stakeholders and start conversations**

Consider the viewpoints of all relevant stakeholders to the process. This would include elected officials, municipal administrative staff and department-level employees. It is crucial to account for the end-user, their current experience using the existing fleet and their main concerns and opinions on transitioning to EVs.

- Those on the municipal staff that most closely manage and operate the existing fleet are key voices in the early stages of the process. Incorporating their first-hand knowledge into policy development can also be an important part of understanding the playing field (below).
- It may also be a useful step to convene and connect with local/industry experts at the early stages.

### **Firm up commitments, goals, and objectives with local leaders**

The overarching tenants that guide an electrification effort can take many forms. Emissions reductions, decreased reliance on fossil fuels, or overall cost savings are all examples of different ways to consider an electrification initiative. Where such an initiative would be placed within a municipality's policy network can also vary. Whether folded into existing frameworks or set out as part of a climate action plan, it is key that an electrification effort is set out explicitly and clearly in an adopted policy/document.

- Best practice example: One subtle but effective way to a municipality can commit to electrification is through the adoption of a "Green Fleet Policy." This is a type of policy that prioritizes EVs in the procurement process by making them the default option. Such a policy would require additional justification to approve the procurement of any internal combustion engine vehicles. This type of approach could be tailored to suit the scope of electrification, such as applying only to light-duty vehicles or excluding procurement for certain departments whose vehicle needs exceed the feasibility of EV (such as police vehicles).

### **Mt. Lebanon checklist**

✓ Hold meeting(s) to collect questions and input from municipal employees who operate or maintain fleet vehicles.

✓ Decide if contracted services (such as landscaping) are expected to operate EVs.

✓ Charge the Financial Management Advisory Board with creating a Total Cost of Ownership metric for various vehicle types in the municipal fleet. When studying total cost of ownership and determining how to finance new electric vehicle purchases, consider the "Covering Capital Costs" suggestions in this Appendix.

✓ Review the fleet assessment prepared for the Capital Improvements Plan, and augment it as necessary with data on vehicle use intensity, parking locations, daily

*Continued on next page*

## *Understand the playing field*

Before starting the electrification process it is important to understand local landscapes and how electrification will affect municipal functions, especially local procurement processes.

- Example: misaligned financial incentives. It is possible to see split incentives in your municipality between those in charge of purchasing (i.e. upfront costs) and those financially responsible for vehicle maintenance (i.e. lifetime costs), often the department that uses them. The misalignment comes in when considering the transition from internal combustion vehicles to electric vehicles, which have a higher upfront cost disincentivizing the procuring party, but lowering operating costs for the department that would end up using the vehicle. One way to align these financial incentives is to base purchasing decisions based on Total Cost of Ownership (TCO), a metric that accounts for costs associated with vehicle maintenance and use over its entire lifetime. A TCO comparison between internal combustion and electric vehicles can be especially useful for making the electrification case.
- Another important dynamic is the relationship between fleet charging needs and available or required facilities and facilities development. It is key that projected capacity needs are accounted for because as a principle, pre-planned charging installations are much more affordable than retrofit projects.
- It is likely also to be important to assess maintenance practices to determine who would be responsible for working on electric vehicles, understanding their capacity, and preparing to hire people with applicable skills or assisting current staff members with training. Skill development involves associated costs. This link to the Department of Energy's Alternative Fuel Data Center (AFDC) answers many questions about likely maintenance needs: [https://afdc.energy.gov/vehicles/electric\\_maintenance.html](https://afdc.energy.gov/vehicles/electric_maintenance.html)

## *Mt. Lebanon checklist*

*Continued from previous page*

usage levels and potential carbon reduction. Identify whether or how best to "rightsize" the fleet.

✓ Key stakeholders on the municipal staff (DPW, Finance, Emergency Services, Sustainability, others) meet with Duquesne Light's electric fleet advisory service personnel to identify potential benefits, problems, solutions and decisions.

✓ Begin assisting fleet automotive repair technicians in gaining training to enable them to take on EV maintenance and repairs. Community College of Allegheny County - West Hills Center is initiating a training program for electric vehicle maintenance. Contact Robert G. Koch, rkoch@ccac.edu. Note that electric engines are expected to require fewer repairs than internal combustion engines, and that for the first few years, most repairs will be covered by a warranty and completed by the dealership.

*Continued on next page*

## Technical considerations

### Conduct fleet assessments

A fleet assessment is the most important technical step for starting electrification. This involves cataloging a variety of key metrics such as vehicles make, model, age, mileage, and other use data.

- These assessments can also collect other useful data, such as daily usage levels, vehicle use intensity, parking locations and fleet breakdown by department.
- Much of this data should be readily available or otherwise easy to collect. However, professional assessment services are available.
- Duquesne Light Company has been expanding its electrification resources and services. These now include electric fleet advisory services, a fleet charging program, and a community charging program.

Building robust and productive relationships with local electric utility providers as well as any other relevant external bodies is a key step in electrification. Having a relationship that extends beyond the provider-user dynamic can pay dividends as a municipality looks to expand electrification. Because the utility needs to provide charging capacity for new fleet vehicles as well as maintain a functioning grid for residents and nearby communities.

### Use the “right-sizing” principle

Analyzing a completed fleet assessment can be one way to find room for innovation and identify the optimal first steps toward electrification. The rightsizing principle describes an approach to fleet make-up that ensures optimal efficiency and fit for each vehicle use-case and function.

- For example, it can be important to confirm that certain departments or municipal staff aren’t using “too much car,” like a department that uses, but might not need, an SUV.
- Another way rightsizing can help overall sustainability is through identifying areas to use innovative or novel vehicle types. As an example, smaller flat-bed trucks may be suitable for some municipal maintenance work, especially when range is not an issue. These smaller units would be less costly to purchase and to charge. A rightsizing approach might widen the range of possible vehicle types that can be used within the fleet.

### Mt. Lebanon checklist

*Continued from previous page*

- ✓ Informed by the aforementioned studies and meetings, create, adopt and implement a "Green Fleet Policy," that addresses purchasing, maintenance, staffing, financial prudence, and climate action goals. Cover matters including:
  - Location and type of charging stations
  - Charging schedule
  - Carbon reduction schedule by vehicle type and usage
  - Number of skilled automotive technicians needed
  - Total cost of ownership by vehicle type, and in what instances the fleet could be "right-sized" to reduce the type or number of vehicles
  - Consider making procurement of EVs the default purchasing option, forcing an evaluation prior to each purchase, with justification for opting for combustion engines.

### *Start with low hanging fruit*

Through analysis of a completed fleet assessment, and potentially with a rightsizing lens, certain low hanging fruit may be identified as the obvious first steps towards electrification. Consider the questions in this chart:

| CRITERIA                                    | QUESTIONS TO CONSIDER  | RULES OF THUMB  |
|---|--|---|
| <b>Daily driving needs (range, size)</b>    | Are viable electric models available?                        | Vehicles driving less than ~150 miles per day are easier to electrify given commonly available battery sizes. |
| <b>Duty cycle/charging windows</b>          | Will AC charging suffice? Can vehicles share chargers?       | Windows of 8-plus hours help enable lower-power charging feasibility, sharing of chargers, and cost savings.  |
| <b>Parking location and charging access</b> | Is it easy to charge during off hours?                       | Vehicles parked in a dedicated garage or lot are much easier to provide with charging.                        |
| <b>Special requirements</b>                 | Is the vehicle used for pursuit or medical response?         | Operational requirements for these vehicles generally make them a lower priority for electrification.         |
| <b>Replacement schedule</b>                 | How many years until retirement of existing vehicles?        | Vehicles at or near retirement age can be replaced with lower sunk costs and/or limited resale concerns.      |
| <b>Fuel and maintenance</b>                 | Is there an opportunity to replace the biggest gas guzzlers? | Electrifying the least efficient ICE vehicles provides the largest fuel savings.                              |

### *Plan ahead*

Building up charging capacity and/or installing a charging facility can have long lead times. It is often a complex process and requires coordination and planning. As part of the technical evaluation, consider:

- Bringing the local electrical utility into municipal conversations, policy development, and planning early on improve the chances of smooth installations and a smooth transition to charging EVs once they are procured as part of the fleet.
- Additional considerations:
  - i. Part of a thorough technical planning process will include assessing the viability of desired charging sites. What would your municipal garage need to charge EVs? Is there suitable infrastructure in place? If new EVs would need to be kept in a new location, how would that affect their use and municipal operations?
  - ii. Another aspect on the charging capacity side is determining what type of charging facility your

municipality will be able to install and where. For example, level-1 and level 2 charging equipment vary significantly in terms of energy-use levels and charging times.

## Financial considerations

### *Promote and capitalize on lifetime savings*

- In 2020 Consumer Reports estimated that some EVs might be 50% less expensive over their lifetime than their internal combustion engine counterparts.
- As mentioned in the other steps, this is where a total cost of ownership measurement plays a crucial role by providing a financial incentive for electrification, especially in the long term.

### *Optimize a charging schedule when possible*

It is common for energy-use fee structures to vary through different times of the day. Accounting for the different costs associated with peak-time energy use (usually during the daytime) and off-peak energy use can inform how to plan for fleet charging. Prioritizing off-peak EV charging can maximize lifetime savings. Here is an illustrative example:

|                                      | Unit          | Unmanaged    | Managed      |
|--------------------------------------|---------------|--------------|--------------|
| <b>Electricity Use</b>               | kWh/month     | 25,000       | 25,000       |
| <b>On Peak</b>                       | kWh/month (%) | 11,250 (45%) | 5,000 (20%)  |
| <b>Off Peak</b>                      | kWh/month (%) | 13,750 (55%) | 20,000 (80%) |
| <b>Max Demand</b>                    | kW            | 91.2         | 53.2         |
| <b>Customer Charge</b>               | \$/month      | \$40.00      | \$40.00      |
| <b>On-peak Electricity Cost</b>      | \$/month      | \$1,125.00   | \$500.00     |
| <b>Off-peak Electricity Cost</b>     | \$/month      | \$825.00     | \$1,200.00   |
| <b>Demand Charge Cost</b>            | \$/month      | \$1,003.20   | \$585.20     |
| <b>Total Cost</b>                    | \$/month      | \$2,993.20   | \$2,325.20   |
| <b>Average Cost/kWh</b>              | \$/kWh        | \$0.12       | \$0.09       |
| <b>Managed Charging Cost Savings</b> | % savings     | N/A          | 22%          |

### ***View charging infrastructure as a long-term asset***

Because the future of car travel is overwhelmingly electric, investment in EV charging infrastructure today is highly likely to pay dividends in the future by building up institutional knowledge to help make future electrification efforts more cost effective.

### ***Navigate potential barriers***

At the municipal level budgetary considerations can often make or break new projects and initiatives. It is important to find ways to align financial incentives across departments, staff, and elected officials.

- Frameworks like total cost of ownership can help to move the financial conversation beyond the potentially higher upfront cost of EVs.
  - i. Identifying opportunities to improve fleet efficiency based on a completed fleet assessment and a rightsizing approach can also be a way to save on overall fleet costs.

### ***Covering capital costs***

Finding ways to fund the expenditures associated with electrification is probably the most important way to gain support for a transition to EVs. In general this can be done through these approaches:

- Public funding. There is a growing array of potential funding sources for electrification, including grant opportunities from multiple levels of government and the financial incentives set up by recent federal legislation.
- Innovative management approaches may help.
  - i. Pay it over time - One proven way to offset some of the financial burden associated with EV procurement is to consider a lease-based approach. A closed term lease usually has fixed monthly payments and covers repairs/maintenance. Additionally, higher fees associated with a lease may be offset by lower operating costs. This could be one way to start small and test how EVs will fit into a existing fleet operation.
  - ii. Scale up or scale down - Another way to get electrification off the ground is through a scaled approach to transition. This might be working with municipal neighbors to increase purchasing capacity or to share the cost of charging infrastructure. It could also mean scaling back and planning for a phased or very gradual approach to electrification.



# green infrastructure

The *Ascend Lebo* comprehensive plan recommends that the municipality continue to invest in green stormwater infrastructure on public property, including streets, to mitigate stormwater runoff that pollutes streams, exacerbates flooding and increases erosion.

Private property owners also can embrace green infrastructure. Here are some ideas and resources:

## ***Plant a tree***

Trees are nature's most important form of green infrastructure. Roots and leaves soak up rainwater and slow runoff. Moreover, through photosynthesis, trees cleanse the air by absorbing carbon dioxide and releasing oxygen. Planting native trees is therefore one of the easiest and most feasible forms of installing green infrastructure.

Tree Pittsburgh sells seed-grown native species saplings at special "tree adoption" events. Website information associated with the annual tree sale events can help property owners choose the right tree for the conditions on their land, in terms of mature size, sun/shade, wet/dry soils.

Tree Pittsburgh Tree Adoptions: <https://www.treepittsburgh.org/tree-adoptions/>

Landscaping with Native Plants (PA Department of Conservation and Natural Resources): <https://www.dcnr.pa.gov/Conservation/WildPlants/LandscapingwithNativePlants/Pages/default.aspx>

Audubon Society of Western PA list of native plants: <http://www.aswp.org/pages/list-natives>

## ***Install a rain barrel***

Rain barrels store stormwater from gutters and downspouts, keeping this flow of runoff from entering storm sewers. Rain barrels are large containers – often 50-80 gallons – that collect and hold water. Through a hose attached at the bottom, property owners can drain the barrel at their convenience to water planting beds.

More information: <https://extension.psu.edu/rain-barrels-information-and-guide>



Workshops: <https://extension.psu.edu/rain-barrel-workshop>

Maintenance: <https://extension.psu.edu/rain-barrel-winter-maintenance-dont-forget-to-disconnect>

### ***Put in a rain garden***

Rain gardens are bowl-shaped planting beds where water can collect and slowly infiltrate. Raingardens can be designed to capture natural runoff or to hold water diverted from downspouts. These can range from simple to very complicated, and some size calculations will probably be necessary. Depending on the conditions at any given property and the owner's goals, professional design services might be needed, along with permits for digging and installing pipes to deal with overflow.

**Simple version:** Look for wet spots in the yard where rainwater naturally collects (making sure this is at least 10 feet from a foundation, patio or wall). Dig out the area well, back-fill to 6" depth with topsoil, and plant native shrubs or flowers suited to periodic inundation, the soil chemistry, sun/shade and other conditions.

Step-by-step guidance: <https://extension.psu.edu/rain-gardens-the-basics>



*Pashek+MTR*

**Medium version:** Begin by checking with the municipality because permits might be required for construction or to divert water flow, grade the soil, or install pipes. To divert stormwater draining from a roof or other hardscape, the property owner should first calculate how much runoff will collect, by measuring the roof area draining into the downspout. Divide the area by 6, and create a planting bed of that size with a finished depth of 6 inches. This will capture water from a 1" rainfall. Be sure to call PA One Call (800-242-1776) before digging.

More information: <https://extension.psu.edu/rain-gardens-can-help-slow-the-flow>

Three Rivers Rain Garden Alliance: <http://raingardenalliance.org/>



*Three Rivers Rain Garden Alliance*

**Complex version:** Begin by checking with the municipality because permits might be required for construction, or to divert water flow, grade the soil, or install pipes. Raingardens near foundations or hardscapes or those that strive to accommodate a lot of water in a constrained space while also managing any overflow will require lining, overflow mechanisms and underdrains so new water problems aren't created. This will require understanding the soil chemistry and needed amendments, how much water can infiltrate, and calculations of how much water will enter the rain garden. Be sure to call PA One Call (800-242-1776) before digging.

More information: <https://extension.psu.edu/infiltrating-stormwater>

Homeowner's guide to stormwater management: <https://www.accdpa.org/files/resources/30/southwestern-pa-homeowners-guide-to-stormwater.pdf>

Interactive National Stormwater Calculator: <https://swcweb.epa.gov/stormwatercalculator/>

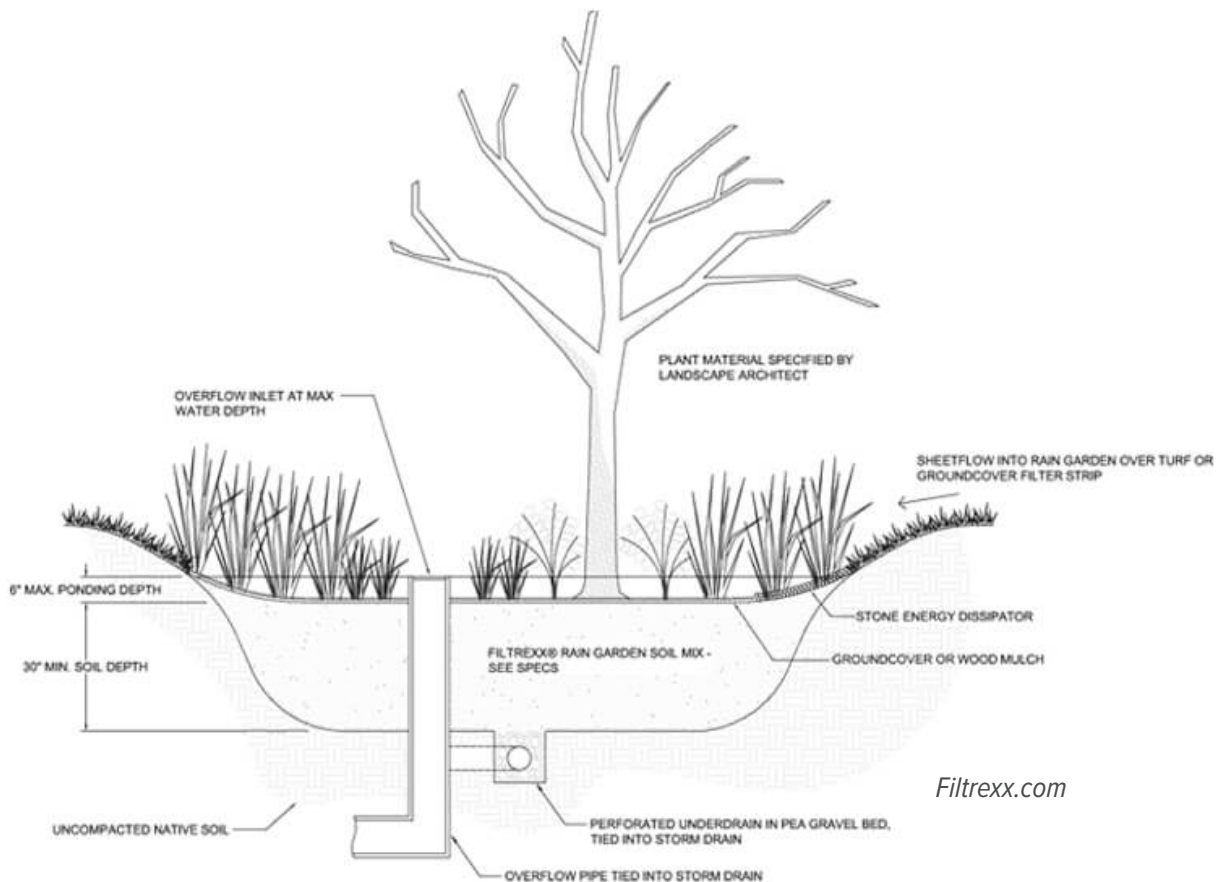
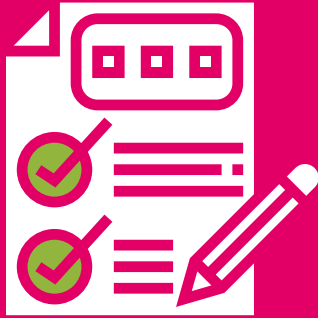


Diagram of a rain garden with engineered soil, overflow mechanism and underdrain.

# development review scorecard

Included for general consideration, the following Development Review Scorecard is an example from St. Louis that was developed and adopted as part of a neighborhood planning process. The intentional application of community values and priorities to a development review and approvals process may be most relevant in Mt. Lebanon for specific major Uptown redevelopment projects, such as South Garage, Bower Hill/Washington or the Denis Theater corner. Developers interviewed for this project emphasized that these sites represent an opportunity to set the bar for quality in the built environment for decades to come.





# Development Review Scorecard

## WEST END & VISITATION PARK

### Purpose

To ensure that residents of the West End and Visitation Park can influence development outcomes and that the distribution of public dollars for development is transparent, meets the needs of the existing community and furthers the goals outlined in the weCollab plan.

### Principles of the Scorecard

- » Community Engagement/ Planning
- » Housing
- » Economic Development
- » Transportation
- » Design/Preservation

### When to Use the Scorecard

- » When approving Zoning Changes/ Variances
- » When approving supportive public investment for Real Estate Projects (e.g., public subsidy, tax abatement, public land sale)
- » When approving public investment in Infrastructure Projects

### Application Process

Once your application is submitted it will be reviewed by members of the Development Review Committee (DRC). This group will discuss the application and will be in touch with any questions. Once the application is scored they will reach out and may want you to attend a DRC meeting to discuss next steps.

CONTACT INFO FOR THE DRC?



Use the link or QR to submit an application

# The Scorecard

For the following statements, you will be asked to describe how the project applies. If necessary, you will have the opportunity to submit any files needed to support your responses. If the project does not apply to the statement, you can skip the statement and move on to the next one.

|                             |                           |                              |   |   |
|-----------------------------|---------------------------|------------------------------|---|---|
| <b>A / 90-100%</b><br>Great | <b>B / 80-90%</b><br>Good | <b>C / 70-80%</b><br>Just OK | <b>D / 60-70%</b><br>Re-think your approach | <b>F / Less than 60%</b><br>Fail, no approval |
|-----------------------------|---------------------------|------------------------------|---|---|

| 1. Community Engagement/Planning   | Points |
|--|--------|
| 1a. The project was initiated by community member(s)   | 25     |
| 1b. The project furthers goals outlined in the <a href="#">weCollab Plan</a>   | 25     |
| 1c. Community members have authority in the decision-making process, such as membership on a project committee or taskforce  | 25     |
| 1d. Community members were engaged within the first six months of the planning process   | 25     |
| 2. Economic Development  |        |
| 2a. The project uses local workforce programs to connect community members to construction jobs and long-term employment within the project  | 33     |
| 2b. The project applicant commits in writing to make the best effort to attract Black, and other people of color (POC) owned-businesses  | 33     |
| 2c. When hiring consultants and contractors, the project applicant commits in writing to make the best effort to hire local, Black, and other people of color (POC) owned-businesses   | 33     |
| 3. Housing   |        |
| 3a. The project preserves and reinvests in existing affordable housing   | 100    |
| 4. Transportation  |        |
| 4a. The project infrastructure provides and/or improves safe, attractive, and convenient access to pedestrian, bicycle, and transit systems  | 33     |
| 4b. The project includes bike parking and storage  | 33     |
| 4c. The project promotes traffic calming and pedestrian safety. <a href="#">St. Louis 50-50 Sidewalk Program</a>   | 33     |
| 5. Design/Preservation   |        |
| 5a. The project preserves existing buildings and/or re-uses existing historic materials  | 17     |
| 5b. The project design reflects the history and culture of the neighborhood either through building reuse and/or by working with local artists to design key aspects of the building/public space  | 17     |
| 5c. The project incorporates Universal Design  | 17     |
| 5d. The project is built with energy efficiency to reduce utilities for residents/tenants  | 17     |
| <b>5e. Residential projects:</b> The design prioritizes public frontages and emphasizes first-floor frontage and the space between the building and the street. Examples include stoops and porches; gardens; and, if a wall or fence is desired, a low masonry wall or open wood or metal fence (not chain link)  | 17     |
| <b>5f. Residential projects:</b> Garages are either set to the rear of the primary building or, when attached, set back from the front door and facade a minimum of 20 feet  | 17     |
| <b>5e. Commercial and/or mixed-use projects:</b> The design prioritizes the public frontages, the front door or storefront, and the space between the front door and the sidewalk. This may include but is not limited to: a legible storefront, lobby, or door; signage; landscaped patio; low walls; planters; lighting; benches, and bike racks. Parking between the sidewalk and the storefront should be avoided. | 17     |
| <b>5f. Commercial and/or mixed-use projects:</b> The project includes public space and a plan for programming/management   | 17     |
| Extra Credit   |        |
| Project pays a livable wage (a livable wage is defined as \$15 per hour or above)  | 25     |

# mobility

This section provides additional detail for recommendations in the "Mobility" chapter of the Ascend Lebo comprehensive plan.



## opening up typologies

The *Ascend Lebo* comprehensive plan recommends considering additional street typologies for both street reconstruction projects and intersection enhancement projects. These could include, but would not necessarily be limited to, one-way streets, installations of bike lanes, roundabouts, woonerfs or other treatments that meet the goals of the Complete Streets Policy and the community. Updating the Subdivision and Land Development ordinance represents an opportunity to incorporate new design options.

The best source for inspiration in this regard is the Urban Street Design Guide published by the National Association of City Transportation Officials (NACTO). Materials from this guide appear on subsequent pages. Additionally, the municipality should consider Portland's Trees in the Curb Zone Pilot Project, which provides for constructing tree space in the curb/parking zone: <https://www.portland.gov/transportation/planning/trees-curb-zone>, and Pittsburgh Regional Transit's guides for bus stop design and Transit-Oriented Development Best Practices: [https://engage.rideprt.org/download\\_file/21/488](https://engage.rideprt.org/download_file/21/488).

With regard to selecting and implementing bikeways, the municipality can draw insight from NACTO's All Ages and Abilities criteria, outlined in the table on the following page. These criteria allow communities to determine where, when and how to best combine traffic calming tools with roadway design changes to improve safety and increase cycling uptake, making cycling a safe, equitable way to move for the majority of people.

## Contextual Guidance for Selecting All Ages & Abilities Bikeways

| Roadway Context   |                                   |  |   | All Ages & Abilities Bicycle Facility                            |
|---|-----------------------------------|--|---|--|
| Target Motor Vehicle Speed*   | Target Motor Vehicle Volume (ADT) | Motor Vehicle Lanes                                | Key Operational Considerations  |  |
| Any   |                                   | Any  | Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡ | Protected Bicycle Lane   |
| < 10 mph  | Less relevant                     | No centerline, or single lane one-way              | Pedestrians share the roadway   | Shared Street  |
| ≤ 20 mph  | ≤ 1,000 – 2,000                   |  | < 50 motor vehicles per hour in the peak direction at peak hour   | Bicycle Boulevard  |
| ≤ 25 mph  | ≤ 500 – 1,500                     | Single lane each direction, or single lane one-way | Low curbside activity, or low congestion pressure   | Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane |
|   | ≤ 1,500 – 3,000                   |  |   | Buffered or Protected Bicycle Lane                               |
|   | ≤ 3,000 – 6,000                   |  |   | Protected Bicycle Lane   |
|   | Greater than 6,000                |  |   |  |
|   | Any                               | Multiple lanes per direction                       |   |  |
| Greater than 26 mph†  | ≤ 6,000                           | Single lane each direction                         | Low curbside activity, or low congestion pressure   | Protected Bicycle Lane, or Reduce Speed                          |
|   |                                   | Multiple lanes per direction                       |   | Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed  |
|   | Greater than 6,000                | Any  | Any   | Protected Bicycle Lane   |
| High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts |                                   | Any  | High pedestrian volume  | Bike Path with Separate Walkway or Protected Bicycle Lane        |
|   |                                   |  | Low pedestrian volume   | Shared-Use Path or Protected Bicycle Lane                        |

Source: NACTO

\* While posted or 85th percentile motor vehicle speed are commonly used design speed targets, 95th percentile speed captures high-end speeding, which causes greater stress to bicyclists and more frequent passing events. Setting target speed based on this threshold results in a higher level of bicycling comfort for the full range of riders.

† Setting 25 mph as a motor vehicle speed threshold for providing protected bikeways is consistent with many cities' traffic safety and Vision Zero policies. However, some cities use a 30 mph posted speed as a threshold for protected bikeways, consistent with providing Level of Traffic Stress level 2 (LTS 2) that can effectively reduce stress and accommodate more types of riders.

‡ Operational factors that lead to bikeway conflicts are reasons to provide protected bike lanes regardless of motor vehicle speed and volume.

## Neighborhood Main Street



Neighborhood main streets are a nexus of neighborhood life, with high pedestrian volumes, frequent parking turnover, key transit routes, and bicyclists all vying for limited space. Main-street design should limit traffic speeds and create a narrower profile with frequent, high-quality pedestrian crossings. In recent years, many main streets have been significantly improved through road diets and the conversion from 4 to 3 (or 6 to 5) lanes of travel with bike lanes and a center turning lane or median.

### EXISTING CONDITIONS

The illustration above depicts a main street with 4 lanes of traffic. With medium traffic volumes and high pedestrian activity, the street has significant potential for regeneration as a retail district, yet currently underperforms for those who shop, eat, and walk there. Frequent destinations have resulted in multiple turning and weaving conflicts along the street.

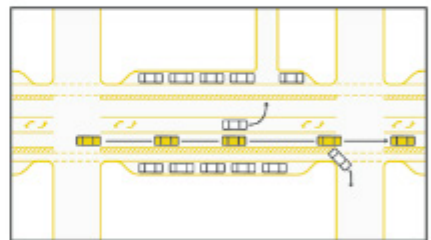
- 1 4-lane configurations have been shown to increase rear-end and sideswipe vehicle crashes and pose a higher pedestrian crash risk.<sup>1</sup>

### RECOMMENDATIONS

While road diets are not appropriate on all 4-lane cross sections, streets carrying up to 25,000 vehicles per day function effectively with 3 lanes, depending on the traffic volumes of nearby adjacent streets.<sup>2</sup>



The weaving line in the 4-lane configuration shows the pattern of a driver avoiding double-parked vehicles and drivers turning left and right.



In a 3-lane configuration, the weaving and conflicts are eliminated.

Source: NACTO Urban Street Design Guide



Reconstruction

Road diets can improve traffic flow and reduce conflicts with turning vehicles, while increasing a road's efficiency by channeling turning vehicles out of the through lanes. Streets designed with either 2 lanes or a 2-way left-turn lane can cut crash risk by nearly half.<sup>3</sup>

Implementation of a road diet should consider the availability of parallel routes, the potential for mode shift, and the channelization of traffic using additional signals.

2 Turn lanes can help to eliminate weaving conflicts on 4-lane roads. As an alternative to the illustration above, a 6-foot pedestrian safety island can be retained in the above configuration by tapering the bike lane buffer near the intersection and shifting the through lanes to the right.

3 The application of a road diet may be carried out in two phases, the first consisting solely of striping and a center turn lane, and the second, of medians and plantings to complement the center lane.

4 From an economic standpoint, road diets often rank favorably with business owners and have a positive impact on local business activity.<sup>4</sup>

5 Bike boxes help cyclists make left or right turns by placing them in front of traffic at a red light. On streets with higher traffic volumes, cyclists may choose to make a two-stage turn.

6 Parklets are ideal for neighborhood main streets with active storefronts, heavy foot traffic, and lots of retail activity.

7 Streets with both heavy freight and parking demand, as well as on-street bike lanes, benefit from dedicated loading zones near the intersection. Loading zones help reduce obstruction of the bike lane and make deliveries easier for businesses. Loading zones can be striped and signed, or managed for off-peak deliveries.

*The street illustrated above depicts a 64-foot roadway within a 94-foot right-of-way.*



BROOKLYN, NY

Source: NACTO Urban Street Design Guide



## Neighborhood Street

Local streets in residential neighborhoods are often underutilized as spaces for play and leisure. These streets should provide safe and inviting places to walk with direct access to local stores and schools. Design for local streets can combine stormwater management features, curb extensions, vertical speed control elements, and bicycle facilities that encourage safe speeds and meter through traffic.



### RECOMMENDATIONS

- 1 On 1-way neighborhood streets, travel lanes may be striped to narrow the perceived width of the roadway. An undifferentiated traveled way encourages higher speeds. Crash rates have been shown to increase as lane width increases.
- 2 Left-side bike lanes reduce the risk of dooring conflicts and are an effective treatment for most neighborhood streets.
- 3 Raised crosswalks or curb extensions maintain safe travel speeds and reinforce the residential nature of the street.<sup>1</sup>

*The street illustrated above depicts a 30-foot roadway within a 50-foot right-of-way.*



#### CAMBRIDGE, MA

Bike lanes narrow this residential street and serve as a valuable low-volume route for commuters.

*Source: NACTO Urban Street Design Guide*



## Yield Street

2-way yield streets are appropriate in residential environments where drivers are expected to travel at low speeds. Many yield streets have significant off-street parking provisions and on-street parking utilization of 40–60% or less. Create a “checkered” parking scheme to improve the functionality of a yield street.



### RECOMMENDATIONS

For a yield street to function effectively, motorists should be able to use the street intuitively without risk of head-on collision. Depending on whether the yield street has high or low parking utilization, flush curbs, or other features, its configuration may vary. A yield street with parking on both sides functions most effectively at 24–28 feet, while yield streets with parking on only one side can be as narrow as 16 feet.<sup>1</sup>

**1** All residential streets should provide safe and inviting places to walk and good access to local stores and schools. Design should mitigate the effects of driveway conflicts, reduce cut-through traffic, and maintain slow speeds conducive to traffic safety.

**2** Driveways should be constructed to minimize intrusion upon the sidewalk. Maintain sidewalk materials and grade across driveways.

**3** The planted furniture zone of the sidewalk creates opportunities for street trees, bioswales, pervious strips, and rain gardens.

**4** While most yield streets should have a minimum of signage and striping, signage should be used to indicate bidirectional traffic at transition points or where 2-way operation has recently been introduced.

Parking utilization on yield streets should be monitored closely. Before and after conversion, cities should consult with local residents to see whether or not a “checkered” parking scheme should be striped or remain unofficial.

*The street illustrated above depicts a 30-foot roadway within a 45-foot right-of-way.*



#### PORTLAND, OR

A curb extension narrows the entry and slows turning vehicles at the mouth of this yield street.

Source: NACTO Urban Street Design Guide

## Green Alley

The majority of residential alleys have low traffic and infrequent repaving cycles, resulting in back roads with potholes and puddling that are uninviting or unattractive. Green alleys use sustainable materials, pervious pavements, and effective drainage to create an inviting public space for people to walk, play, and interact.<sup>1</sup>



### RECOMMENDATIONS

- 1 Construct green alleys with low-impact pavement materials, such as pervious pavements with high reflectivity to reduce heat island effects.



#### DETROIT, MI

This alley in Detroit was transformed to manage stormwater using pervious pavement and native plants along the walkway.

- 2 Alleys may be operated as pedestrian-only environments or as shared streets. Use bollards, signs, and design features that make clear the intended alley users.

Alley greening and maintenance may be initiated and carried out by local residents or neighborhood associations.<sup>2</sup>

- 3 To avoid puddling, stormwater run-off should be infiltrated in-place using permeable paving or rain gardens at the edge of the pedestrian path.<sup>3</sup>

- 4 To maintain a safe environment, green alleys should have adequate lighting. Pedestrian-scale light fixtures that focus their illumination toward the ground and minimize light pollution are recommended. Public safety is of paramount consideration for all new and existing alleys. Good lighting is an essential prerequisite to a feeling of public safety in alleys.

- 5 Green alleys often run parallel to the larger street network, making them ideal low-speed, low-volume links for cyclists.

Alleys provide direct property access and eliminate the need for driveways along main roads where people are walking and biking. Consider the use of alleys in all new developments and renovations to existing properties.<sup>4</sup>

Green alleys may present certain unconventional maintenance responsibilities. Use of textured pavements and other materials may be challenging to existing street sweepers and snowplows. Similar to shared streets, alleys may benefit from the application of snowplow compatible materials and provisions for maintenance equipment access.

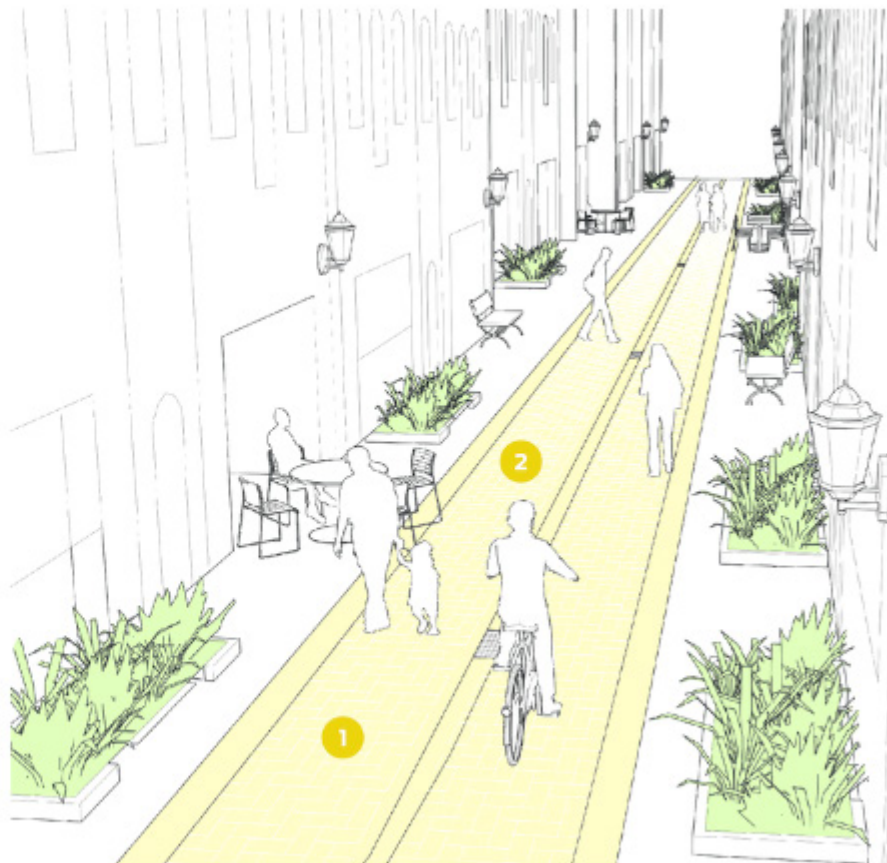
*The alley shown above depicts a 14-foot path within a 28-foot right-of-way.*

Source: NACTO Urban Street Design Guide



## Commercial Alley

Commercial alleys, though often thought of as dirty or unsafe, can be designed to play an integral role in a downtown street network and improve the pedestrian realm in and around commercial areas. The design of commercial alleys should strive to balance their necessary utilitarian features with their place-making potential.



### RECOMMENDATIONS

Intersections between alleys and sidewalks have the potential to obstruct visibility for vehicles (if permitted) and passing pedestrians. Raise the intersection to the sidewalk grade and add rumble strips to mitigate these visibility issues. Warning signs should be provided to warn pedestrians of encroaching traffic.<sup>1</sup>

Freight may use green alleys for loading and unloading, which reduces double-parking on neighborhood streets.

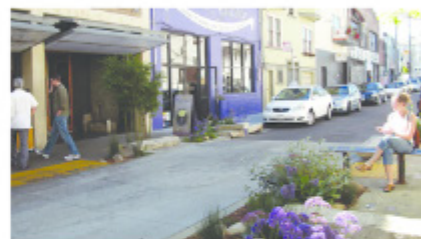
**1** Where access for vehicles is prohibited or minimal, commercial alleys may be constructed using low-impact pavement materials, such as pervious or modular paving.

**2** Bicycle traffic may use commercial alleys. Similar regulations to those of shared space should apply.

Commercial alleys can be restricted for traffic during non-delivery hours for outdoor seating or other uses.

Where vehicle access is permitted, alleys should be maintained to allow easy access by trucks and other freight vehicles. Bollards and other street furniture should be designed to minimize conflicts with freight movements. In some cases, freight may be conveyed using hand trucks or small vehicles. In these cases, careful attention should be paid to the location of curbs and the access from loading zones to entrances to ensure smooth deliveries.

*The alley shown above depicts a 10-foot wide path within a 20-foot right-of-way.*

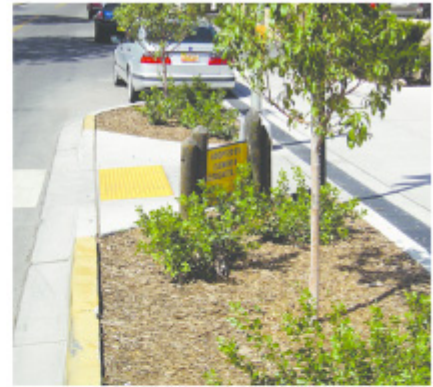


**SAN FRANCISCO, CA**

Alley redesign can feature pavers for the traveled way, parking restrictions, and additional public space.

Source: NACTO Urban Street Design Guide

# Curb Extension



## APPLICATION

Curb extension is an umbrella term that encompasses several different treatments and applications. These include:

- Midblock curb extensions, known as pinchpoints or chokers, which may include cut-throughs for bicyclists.
- Curb extensions used as gateways to minor streets known as neckdowns.
- Offset curb extensions that force vehicles to move laterally, known as chicanes.
- Curb extensions at bus (or transit) stops, also known as bus bulbs.
- Conventional curb extensions, which are a recommended feature where there is on-street parking.

## BENEFITS & CONSIDERATIONS

Curb extensions decrease the overall width of the roadway and can serve as a visual cue to drivers that they are entering a neighborhood street or area.

Curb extensions increase the overall visibility of pedestrians by aligning them with the parking lane and reducing the crossing distance for pedestrians, creating more time for preferential treatments, such as leading pedestrian interval and transit signal priority.<sup>1</sup>

Curb extensions tighten intersection curb radii and encourage slower turning speeds.

Installation of curb extensions may require moving a fire hydrant to maintain adequate curbside access in case of a fire. In such cases, a curb extension may incur additional expense or be reoriented to avoid conflict with the hydrant.<sup>2</sup>

Used as a bus bulb, curb extensions may improve bus travel times by reducing the amount of time a bus takes to merge with traffic after boarding. Bus bulbs also help to prevent motorists from double parking in the bus stop.<sup>3</sup>

Where application of a curb extension adversely impacts drainage, curb extensions may be designed as edge islands with a 1–2-foot gap from the curb or a trench drain.

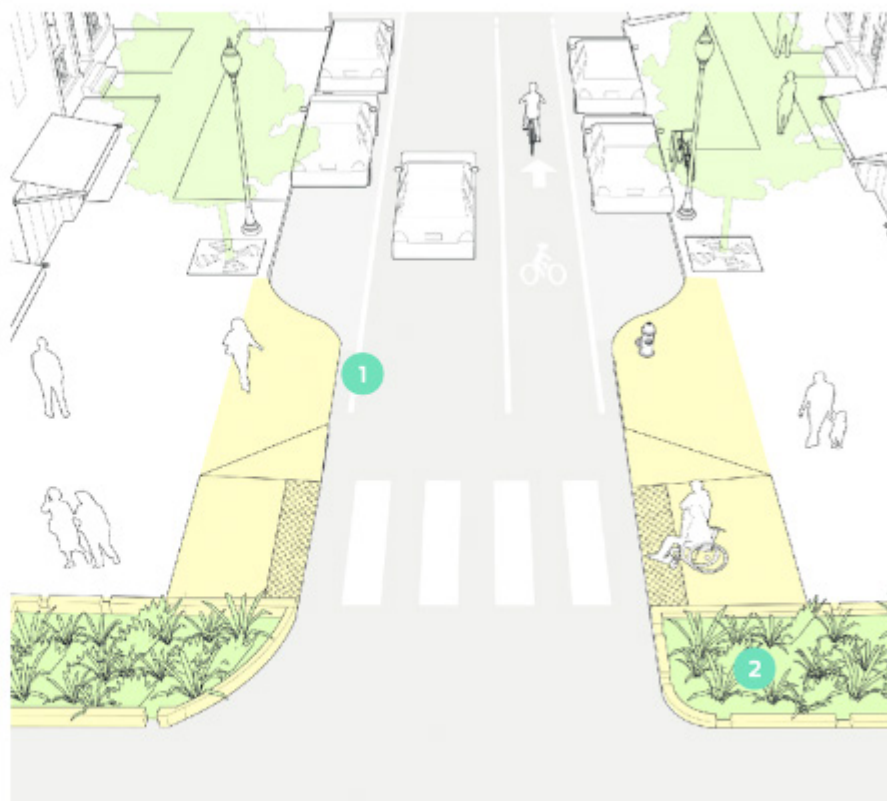
Curb extensions can be implemented using low-cost, interim materials. In such cases, curb extensions should be demarcated from the existing roadbed using temporary curbs, bollards, planters, or striping.

*Source: NACTO Urban Street Design Guide*



## Gateway

Curb extensions are often applied at the mouth of an intersection. When installed at the entrance to a residential or low-speed street, a curb extension is referred to as a “gateway” treatment and is intended to mark the transition to a slower speed street.



### CRITICAL

The length of a curb extension should at least be equal to the width of the crosswalk, but is recommended to extend to the advanced stop bar.

### RECOMMENDED

**1** A curb extension should generally be 1–2 feet narrower than the parking lane, except where the parking lane is treated with materials that integrate it into the structure of the sidewalk.



NEW YORK, NY

Curb extensions should be installed whenever on-street parking is present to increase visibility, reduce the crossing distance, provide extra queuing space, and allow for enhancements, such as seating or greenery.

**2** Combine stormwater management features, such as bioswales or rain gardens, with curb extensions to absorb rainwater and reduce the impervious surface area of a street.



INDIANAPOLIS, IN

Curb extensions may be combined with bioswales in order to decrease puddling at crosswalks.

### OPTIONAL

Curb extensions may be treated with corner street furniture and other amenities that enhance the public realm.



NEW YORK, NY

In advance of a full reconstruction, gateways can be designed using striping or signage that communicates the entrance into a slow zone.

Source: NACTO Urban Street Design Guide



## Pinchpoint

Curb extensions may be applied at midblock to slow traffic speeds and add public space. When utilized as a traffic calming treatment, midblock curb extensions are referred to as "pinchpoints" or "chokers".



## RECOMMENDED

- 1 Plant street trees on curb extensions aligned to the parking lane to narrow the overall profile of the roadway. Before installing street trees on the curb extension, assess surrounding utilities to ensure that the trees' roots will not damage underground infrastructure.

**OPTIONAL**

Pinchpoints can facilitate midblock pedestrian crossings of low-volume streets. These crossings do not need to be marked, unless volumes exceed 2,000–3,000 vehicles per day or midblock destinations warrant an enhanced treatment.

- 2 Bicycle racks can be combined with curb extensions, especially in areas where bicycle parking is insufficient or demand for long-term or short-term parking is unmet.



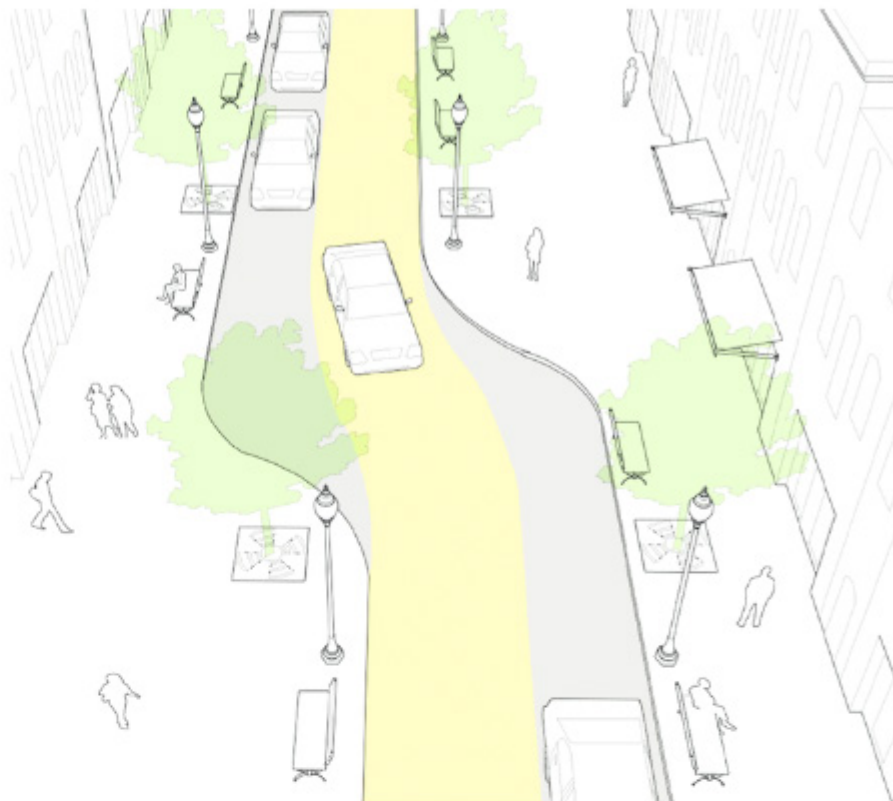
NEW YORK, NY

6 1/2 Avenue in New York City connects a series of privately-owned public spaces that cut midblock through Midtown. The visibility of crossing pedestrians was improved here using pinchpoints constructed with interim materials.

Source: NACTO Urban Street Design Guide

## Chicane

Offset curb extensions on residential or low volume downtown streets create a chicane effect that slows traffic speeds considerably. Chicanes increase the amount of public space available on a corridor and can be activated using benches, bicycle parking, and other amenities.



### RECOMMENDED

A chicane design may warrant additional signing and striping to ensure that drivers are aware of a slight bend in the roadway.

### OPTIONAL

Where application of a curb extension adversely impacts drainage, curb extensions may be designed as edge islands with a 1–2-foot gap from the curb.

Curb extensions can be implemented using low-cost or temporary materials. In such cases, curb extensions should be demarcated from the existing road-bed using temporary curbs, bollards, planters, or striping.



**SAN FRANCISCO, CA**

A chicane was added to slow speeds entering this residential block.

Chicanes may be designed using a return angle of 45 degrees, or a more gradual taper and transition, resulting in an S-shaped roadway.

A chicane configuration may also be created using a "checkered" parking scheme.

Source: NACTO Urban Street Design Guide

## Raised Intersections

Raised intersections create a safe, slow-speed crossing and public space at minor intersections. Similar to speed humps and other vertical speed control elements, they reinforce slow speeds and encourage motorists to yield to pedestrians at the crosswalk.



### RECOMMENDATIONS

**1** Raised intersections are flush with the sidewalk and ensure that drivers traverse the crossing slowly. Crosswalks do not need to be marked unless they are not at grade with the sidewalk. ADA-compliant ramps and detector strips are always required.

**2** Raised intersections (and mini roundabouts) with yield control are preferred to signals on low-speed (<20 mph) and low-volume (<3,000 ADT) streets, as well as some moderate-volume streets in 30 mph zones. STOP signs should be used instead of YIELD signs if there are concerns that drivers might ignore the pedestrian's right-of-way. Raised intersections help reduce vehicle speeds and crash risk while simultaneously reducing unnecessary delay to motorists and bicyclists.

**3** Bollards along corners keep motorists from crossing into the pedestrian space. Bollards protect pedestrians from errant vehicles.

**4** Where two 1-way streets intersect, there will be two corners around which no drivers turn. This can be designed with the smallest constructible radius (approximately 2 feet) as long as a 40-foot fire truck can make the turn without encroaching upon the sidewalk.

*Source: NACTO Urban  
Street Design Guide*



## Mini Roundabout

Mini roundabouts, also known as neighborhood traffic circles, lower speeds at minor intersection crossings and are an ideal treatment for uncontrolled intersections. Mini roundabouts may be installed using simple markings or raised islands, but are best applied in conjunction with plantings that beautify the street and the surrounding neighborhood. Careful attention should be paid to the available lane width and turning radius used with traffic circles.



### RECOMMENDATIONS

1 Mini roundabouts have been shown to increase safety at intersections. Crosswalks should be marked to clarify where pedestrians should cross and that they have priority.<sup>1</sup> ADA-compliant ramps and deflector strips are required.

2 Shared-lane markings or intersection-crossing markings guide bicyclists through the intersection. Where a bicycle boulevard turns at a minor intersection, use bicycle way-finding route markings and reinforce route direction using shared-lane markings.



3 A mini roundabout on a residential street is intended to keep speeds to a minimum. Provide approximately 15 feet of clearance from the corner to the widest point on the circle.

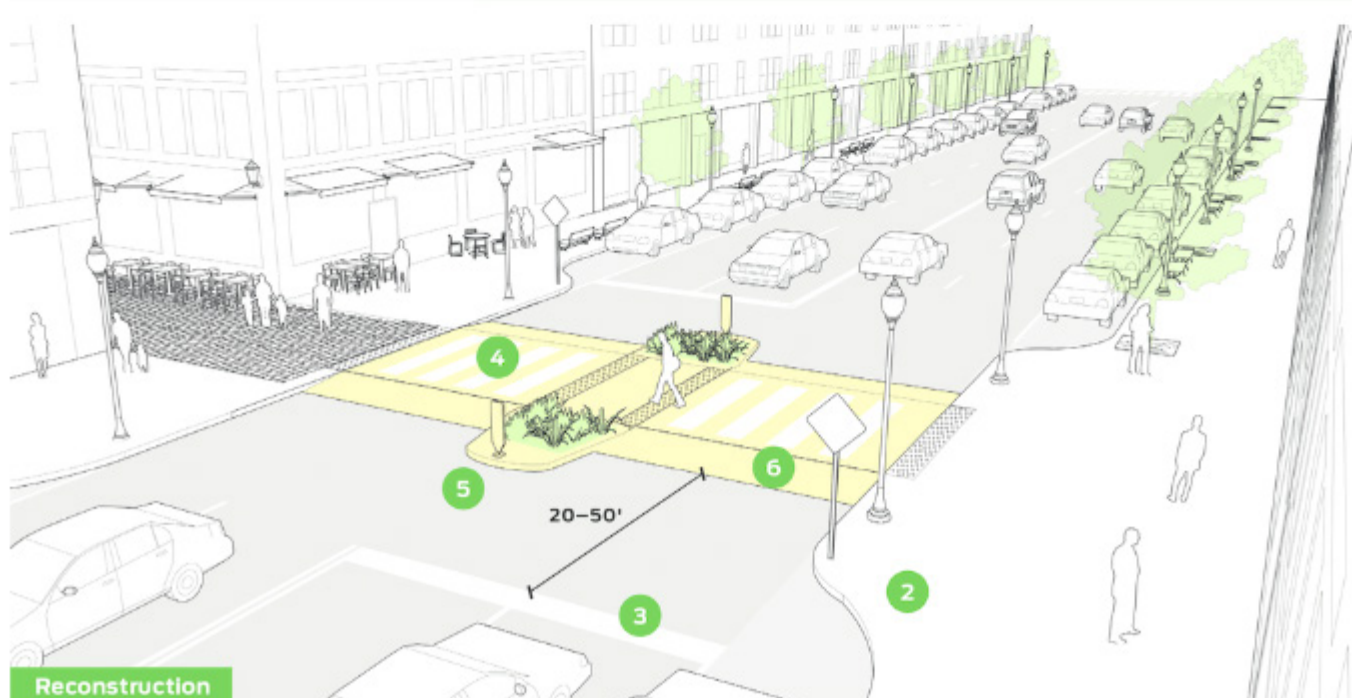
4 Shrubs or trees in the roundabout further the traffic calming effect and beautify the street, but need to be properly maintained so they do not hinder visibility.

Source: NACTO Urban Street Design Guide

## Midblock Crosswalks

Midblock crosswalks facilitate crossings to places that people want to go but that are not well served by the existing traffic network. These pedestrian crossings, which commonly occur at schools, parks, museums, waterfronts, and other destinations, have historically been overlooked

or difficult to access, creating unsafe or unpredictable situations for both pedestrians and vehicles. Designers should study both existing and projected pedestrian volumes in assessing warrants for midblock crossings to account for latent demand.



Source: NACTO Urban Street Design Guide



## RECOMMENDED

**1** Install a midblock crosswalk where there is a significant pedestrian desire line. Frequent applications include midblock bus stops, metro stations, parks, plazas, building entrances, and midblock passageways.

Vertical elements such as trees, landscaping, and overhead signage help to identify crosswalks and islands to drivers.

**2** Daylighting in advance of a crosswalk makes pedestrians more visible to motorists and cars more visible to pedestrians. This may be accomplished by restricting parking and/or installing a curb extension.

**3** Stop lines at midblock crossings should be set back 20–50 feet. This ensures that a person crossing the street is visible to the second driver when the first driver is stopped at the stop line.

**4** Stripe the crosswalk, regardless of the paving pattern or material. Otherwise, drivers are not likely to see it, especially at night.

**5** Medians or safety islands create a 2-stage crossing for pedestrians, which is easier and safer.

**6** At key access points to parks, schools, and waterfronts, and at intersections with local streets, raised crossings increase visibility, yielding behavior, and create a safer pedestrian crossing environment.

Where an unsignalized crossing exists at a transit stop, enhanced crossing treatments or actuated signals should be added. Transit stops should ideally be located so that pedestrians cross behind the bus or transit vehicle. Far-side stop placement is preferable to near side or midblock placement and increases the visibility of pedestrians crossing behind the bus.



LOS ANGELES, CA

## OPTIONAL

A pedestrian tracking survey may be used to document where and how people cross a street, complex intersection, or plaza. This information is useful in locating crosswalks and safety islands, redesigning intersections, and understanding the interface between streets and the surrounding buildings and public spaces.

Actuated pedestrian signals (half-signals), hybrid beacons, or rapid flash beacons may be considered at greenway crossings, midblock locations, or unsignalized crossings where infrequent crossings make a traffic signal or stop sign unnecessary. Fixed-time signals or passive detection are preferable to push-button detection.

Unsignalized midblock crosswalks may be applied at locations with inconsistent pedestrian demand or where a pedestrian connector intersects midblock with a small- or medium-sized roadway

Unsignalized crossings should be highlighted using additional warning signage, high-visibility lighting and markings, actuated beacons (where applicable), and traffic calming features, such as raised crossings and midblock curb extensions.

Where midblock pedestrian crossings in a low-volume downtown commercial or neighborhood residential area are frequent, a designer may consider the application of a shared street treatment. Shared streets should have limited or no markings to reinforce the regulation of the street as a shared space.

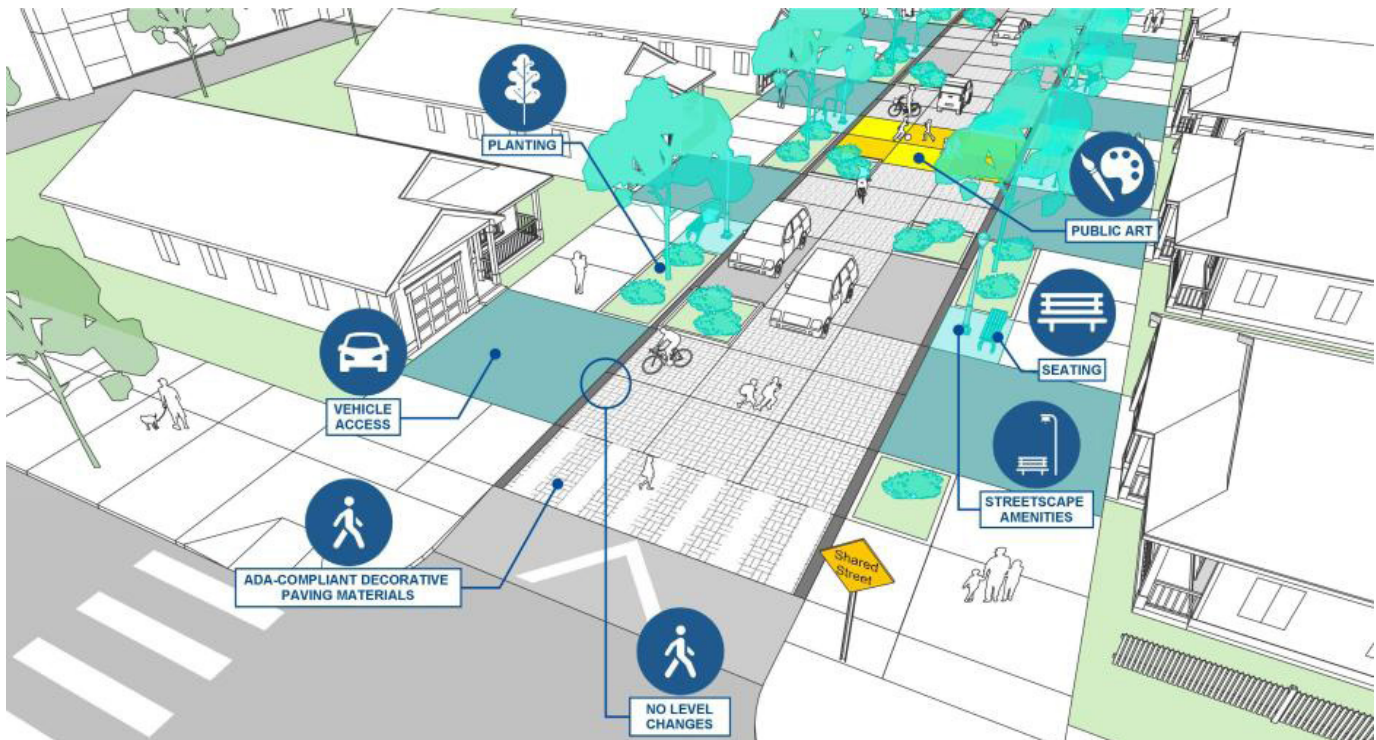
Source: NACTO Urban Street Design Guide

## Shared Street / Woonerf

In the shared street concept, moving and parked cars share space with pedestrians and cyclists. The street is public space to be used simultaneously for all modes, as well as for social and recreational activities. Street design prioritizes community activity and treats vehicles as guests.

Key features of this typology include:

- Avoid traditional curbs.
- Resist the tendency to strictly differentiate between pedestrian and vehicle space.
- Use varied paving materials to define entry points, driving area, parking areas and pedestrian and play areas.
- Manage drainage with swales and permeable surfaces.
- Provide a mixture of fixed and flexible site furnishings.
- Ensure intermittent access for large vehicles, such as fire trucks, garbage trucks, ambulances and moving trucks.



Source: Valley Transportation Authority

# parks & recreation

This section provides additional detail for recommendations in the "Parks and Recreation" chapter of the Ascend Lebo comprehensive plan.

# Potential easements or property acquisitions

The municipality's planning and GIS department should continually study and review which properties or easements might be targets for future acquisition for green space or parkland. Here are potential scenarios to consider, with examples (illustrative) presented thereafter.

Once acquired, the parcels should be developed as neighborhood parks or trail locations, as appropriate.

- Some landlocked parcels – properties with no road access – likely have low sales value and could be acquired to be community greenspace.
- In other cases, parcels abutting existing parkland might be appropriate targets for trail easement acquisitions if the owners show interest. This strategy could encourage park access and help meet both recreation and community connectivity goals.
- Vacant parcels abutting existing parkland also should be considered on the premise that greenspace preservation is important in a largely built-out community.
- Owners of some properties that include fragile steep slopes above streams might be open to conversations about conservation easements to protect their lands from future development.
- Terrain could make a parcel "undevelopable;" such a location, in at least one situation in the community, could become a trailhead for an existing natural area.
- Some parcels have been recommended for green-space acquisition since at least the 2000 comprehensive plan, and these should be pursued. These could potentially hold trails that serve recreation and community connectivity goals.
- Some locations, particularly the northwest and north-central areas, have no neighborhood parks at this time; therefore, an eye could be kept out for properties with large tax delinquencies that perhaps could be acquired below market rate and converted to park land. Proximity to a neighborhood park could result in higher property values for all the rest of the parcels in the area.

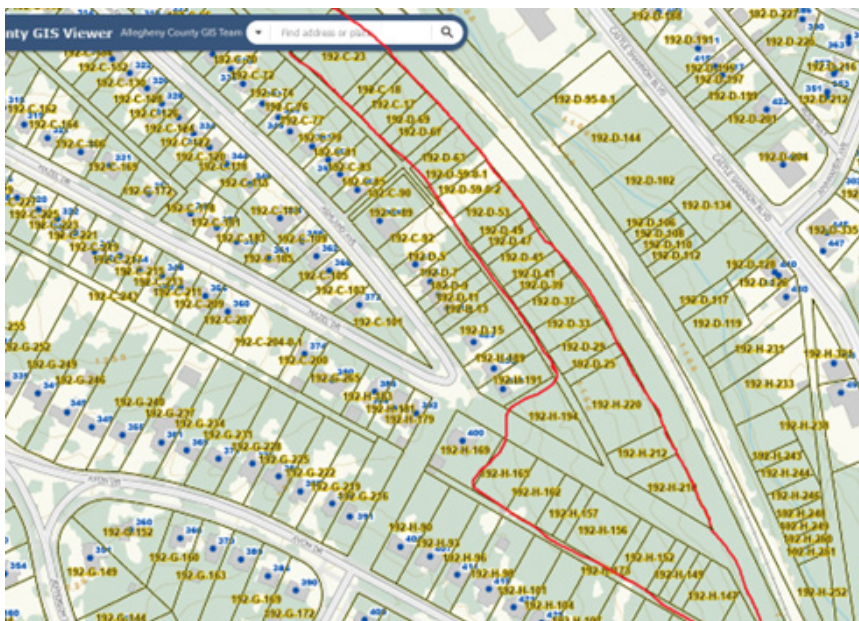


The following examples may prove to be immediately viable or, if not, could be worth conversations about future action.

- 141-H-314, 141-H-339, 141-H-337-0-1, 141-H-335, 141-H-333, all land-locked, undevelopable parcels adjoining Williamsburg Park, appropriate for park expansion whereas now people trespass onto the land.



- Numerous vacant parcels along Pennsylvania Blvd paper street and the foot of Hazel Drive should be preserved as green space and improved with a simple trail loop.

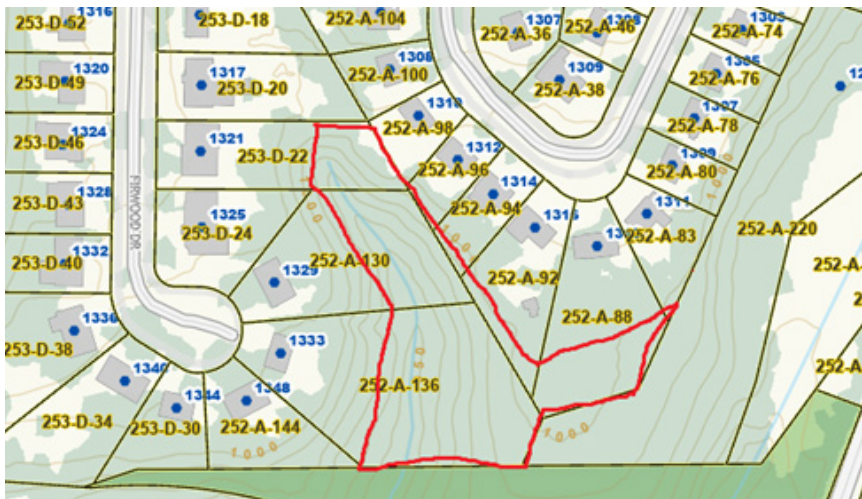




- 143-N-400 (Eletan Drive), vacant, steep slope land, to create a trailhead entrance to Scott Nature Conservancy property. This part of town is a recreation desert, so a trailhead would make sense. Informal trails already cross this privately owned parcel.



- Strive to acquire conservation or trail easements on private properties to protect hillsides and watersheds and to allow for construction of sustainable trails and neighborhood or park connections:
  - > Parcels 252-A-136, 252-A-130, 252-A-88, 193-J-190 adjacent to Robb Hollow Park.



> Parcel 97-P-80 adjacent to Sunset Hills Park (Brafferton) to protect stream valley and connect to McNeilly Park (via Seton LaSalle HS across the street). This will be particularly valuable if Mt. Lebanon builds recreation facilities at McNeilly Park.



- The municipality already owns the Connor Road parcels shown below; trail development would provide a recreation asset and improve community connections:.

Create a neighborhood walking trail through these municipal-owned landlocked parcels: 251-N-224, 251-P-214, 251-P-200, 251-P-200. Obtain a trail easement through Woodbridge Condominiums on Connor Road to also create the neighborhood connections to the woodland trail and to Highland Terrace Park on Sunridge Drive.



