APPLICATION FORM – Spring 2020

This document is intended to use as reference and help in constructing answers to the application. Please submit all applications through the online platform.

YOUR EMAIL* rob.means@electric-bikes.com

YOUR NAME* **Robert Means**

PHONE NUMBER* **408-262-0420**

POSITION TITLE* **Project Manager**

ORGANIZATION* **LoopWorks**

ORGANIZATION WEBSITE http://www.sunnyhillsneighborhood.org/loopworks.html

PROJECT TITLE* **Milpitas Dual-Loop Personal Rapid Transit (PRT)**

STATUS OF TECHNOLOGY OR INNOVATION*
[Dropdown menu]

- Idea
- Concept/prototype
- Proof of concept
- **Commercialization/demonstration**

PROJECT SUMMARY* (1,000 word limit)
Describe the goals and objectives, approach, role of SVCE and project partners, timeline and milestones, outcomes, and motivation and background.

Loopworks hopes the Milpitas advanced transit project will be a see, touch and ride inspiration for cities across the world. That starts with a Vision to "Provide climate-friendly and easy-to-use Personal Rapid Transit (PRT) for movement around Milpitas that bypasses traffic with quick, point-to-point and fare-free rides." The vision, however, extends worldwide: *The LoopWorks PRT project inspires rapid adoption of advanced transit that dramatically reduces transportation sector emissions.*

PRT delivers:

- clean, quiet and responsive public transportation
- automated service available 24 hours a day, rain or shine
- personal comfort and safety at stations and in transit
- construction and operating costs lower than comparable transit options

Project Description

The Transit Area around the Milpitas BART transit hub is badly congested, densely populated, and rife with barriers that challenge walkers and cyclists. A dual-loop PRT System is proposed to mitigate both the congestion and the accessibility issues. Using small electric vehicles on elevated guideways unobstructed by ground-level conditions, residents from 7 separate housing

areas could easily access the BART station, new elementary school, Great Mall shopping center, and three city parks. See project poster at http://www.sunnyhillsneighborhood.org/poster.html

PRT has been technically and financially viable for the past 40 years, but institutional inertia and fear of political consequences has impeded progress. To reduce fear and avoid institutional resistance, LoopWorks will use 3 innovative strategies:

1) Utilize a vehicle design that minimizes guideway size and substantially reduces PRT costs.

2) Adopt a California Benefit Corporation legal structure to provide flexibility and transparency unavailable through governmental, for-profit, and non-profit corporate structures.

3) Seek foundation funding rather than money from government agencies or investors for designing and building the system to minimize delay and ensure financial viability.

Business Model

LoopWorks will secure grant funding for engineering and construction from foundations with goals of reduced greenhouse gas emissions, increased transit ridership, or social equity. To provide free rides to users, alternative revenue streams will be secured to fund the low cost of operations and maintenance. All revenue can be applied to running the system and serving people because grant money eliminates the need to pay for both capital costs and interest on debt.

The LoopWorks PRT system will achieve two major goals: 1) provide extraordinary public transportation service in the Milpitas Transit Area, and 2) provide a new model for future transportation projects. The data and the knowledge gained from building this first PRT system will be useful in sparking, refining and strengthening future projects.

Details

LoopWorks expects SVCE to be one of several funding organizations that provide the first year's operating budget of $600,000. In recognition of their pioneering contributions to clean energy and its efficient use, right of first refusal is being extended to SVCE.

In addition to funders, LoopWorks will work with a design & construction engineering company, the foremost PRT technology expert, and various stakeholders including the City of Milpitas. The milestones and outcomes for the first year of efforts are specified in Start-Up Costs and Activities (pages 83 – 85) in the LoopWorks business plan (http://www.sunnyhillsneighborhood.org/business-plan.pdf).

INNOVATION* (500 word limit)
How is your project innovative? Describe the current problem your project aims to address, how existing solutions fall short, and how your project will address the need.

Our transportation system's reliance upon fossil fuels results in producing roughly 40% of our greenhouse gas emissions. Shifting the transportation sector away from fossil

fuels has been remarkably challenging. Furthermore, the automobile infrastructure itself creates additional problems such as toxic air pollutants, significant deaths and severe traffic congestion. LoopWorks is creating a new transit option that will reduce greenhouse gases and traffic congestion while increasing energy efficiency, safety and transit ridership.

Those taking the time to understand the full extent of the mobility problem facing today's cities will discover that the solutions presently being proposed do not go far enough. While they may alleviate some problems, other serious issues are ignored. *Transportation Options for Greenville* (page 43) outlines the situation by examining the impact of 5 factors: congestion, accessibility, safety, land use and infrastructure. Conclusion of the report: the automobile infrastructure is the real problem.

Conventional transit options clearly are not the answer. The attractiveness of public transit rises with the frequency of service, personal security, and the number of destinations that can be quickly accessed. Unfortunately, Valley Transportation Authority's service level at best is 20 minutes and typically much more between buses. To reduce that headway to 10 minutes – a frequency at which public transit starts to become attractive – would imply a doubling of buses, staff and operating losses. The cost of doing so is not practical for VTA because only 11% of their 2019 operations was covered by rider fares leaving the remaining 89% subsidized by taxes. In fact, the typical American city dweller can only reach 30% of jobs within 90 minutes using public transport. That poor service level is why the traditional mass transit option - buses - capture a modal split in most U. S. cities that hovers around 3% of all trips. Another small percentage is captured by walking, cycling and other non-auto modes leaving 90% of trips being in automobiles.

The potential of PRT to reduce single-occupancy vehicle (SOV) driving is amazing! Estimated ridership on a PRT system ranges from 25% to greater than 50% of the daily trips, a huge increase. PRT level of service outranks both traditional transit and cars on most of a dozen service parameters. PRT cost and capacity compares favorably with other transit options currently in use in Santa Clara County. Furthermore, PRT uses less than one-third the energy per passenger mile of automobiles and public transit – and without greenhouse gas emissions because it runs on electricity.

ORGANIZATION, KEY STAFF & QUALIFICATIONS* (300 word limit)
Describe your organization, key staff that would work on this project, and relevant experience, expertise and qualifications.

During its first year of operation, LoopWorks will lay the groundwork for building a PRT system to serve the Milpitas BART/VTA Transit Center. Until the system goes operational, the Board of Directors will contract work out as much as possible to businesses located within Santa Clara County and paying prevailing wages. The LoopWorks Advisory Board, whose members come from various roles in high-tech

companies, includes an entrepreneur, 2 financial experts, the top PRT hardware expert in the world, and members with deep connections into the Milpitas community.

Our strategic partners will include Intelligent Transportation Network System (ITNS - the system designer), the City of Milpitas and a major construction company. Additionally, Board member and long-time Milpitas resident Rob Means has been promoting efficient clean-energy transportation for 24 years. After a career in computer communications helping lay the foundation for the Internet, Mr. Means began promoting electric scooters and bikes long before they were popular. (In that role, Rob acted as consultant to SVCE's 1st annual *Bike to the Future* event.) As that market matured, Mr. Means has turned his full focus to champion a PRT system for the Transit Area of Milpitas. His vision for systems that reduce energy needs, enhance life, and help society has drawn him to PRT technology and this dual-loop PRT project.

LoopWorks Advisory Board member Dr. J. Edward Anderson is arguably the most knowledgeable and renown PRT expert in the world. Both his long career and impressive accomplishments speak to his integrity and that of his work results. (Find both his resumé and values in the ITNS Business Plan, pages 2 and 92-94.)

Bylaws will be developed that provide for democratic involvement of stakeholders and equitable operation of the business.

GRANT FUNDING REQUEST*
[Dropdown menu]

- No grant funding requested
- Stage 1 – proof of concept ($10,000 - $75,000)
- **Stage 2 – demonstration ($50,000 - $100,000)**

PROJECT BUDGET* (300 word limit)
If you are requesting grant funding, please specify the total amount you are requesting and a breakdown of the project budget to justify the request. Indicate any co-funding that is contributing to the project budget, such as in-kind resources or external grant funding.

The first round of funding for $600,000 will fund a CEO (at a total cost up to $300,000 including benefits) for one year and provide initial start-up funding. The CEO will be tasked with accomplishing 18 goals among which are:

1. Secure a Memorandum of Understanding (MOU) from the City of Milpitas.
2. Identify the prime contractors for design and construction, and secure an MOU agreement with them.
3. Secure MOUs from all property owners required for the LoopWorks project starting with those required for the Mini-Loop.
4. Incorporate with the Secretary of State as LoopWorks.

5. Establish a website.
6. Contact cities with an interest in PRT (Cupertino, San José, Santa Clara, Sunnyvale, Mountain View and Santa Cruz) to solicit their support for this PRT system which will benefit their advanced transit efforts.
7. Determine the amount of insurance required for the construction phase, which will likely include bond money and tear-down insurance.
8. Confirm that the control system offered by Transit Control Solutions, Inc. (TCS) meets the requirements specified on page 58 of ITNS Business Plan (The Design and Assembly of the ITNS Control System).
9. Further develop and refine the list of foundations and organizations within the San Francisco Bay watershed that will be offered the opportunity to invest early in PRT.
10. Inform the California Public Utilities Commission (CPUC) of the project and explore how to work together smoothly.
11. Work with a construction company to conduct preliminary engineering, in which remaining questions are answered, a more detailed design of the system is developed, and its costs are calculated.
12. Estimate ridership on the dual-loop PRT project using the Podaris multi-modal transport planning tool.
13. Secure $6M in funding for design work and project management.

CUSTOMER & COMMUNITY VALUE* (200 word limit)
Describe how this project will deliver value to our customers and the larger community.

Due to the number of stakeholders in such a complex project as the Milpitas PRT system, community-building is at the heart of the enterprise. Before significant amounts of money are spent, MOUs must be secured with key strategic stakeholders including 8 property owners.

The data and the knowledge gained from this first year of PRT system development will provide transit experts and decision-makers with information useful in choosing their own transportation futures.

The big value to customers and community comes when the LoopWorks PRT project is built and starts providing extraordinary public transportation service to residents and visitors in the Milpitas Transit Area. That service includes on-demand service with higher average speeds, shorter trip times, and 24/7 availability.

An elevated PRT system as proposed adds lots of transportation capacity without much need for land. Only very small, widely-separated land plots are needed instead of wide, continuous strips of land.

PRT provides convenient connections between existing transportation options, both public and private. That feature produces the benefit of dramatically higher use of those options.

A successful initial PRT system will be expandable if the community so chooses – perhaps expanding to serve most of the 14 square miles that comprise Milpitas.

CORE ROLE FOR SVCE* (200 word limit)
Describe how this project leverages SVCE's unique position of community-owned electricity provider.

SVCE's Innovation Onramp Program is designed to engage communities in achieving the ambitious carbon reduction goals it has set. LoopWorks is responding with a promising technology and innovative legal structure that could lead to deep decarbonization in the mobility sector.

SVCE's role in the PRT system proposed for Milpitas starts with helping finance the effort. While the $60,000 being sought from SVCE represents 1% of what will ultimately be needed to finance the project, its early support will encourage other funders to consider joining the effort. In particular, SVCE can assist with certain external funding opportunities (e.g. DOE, CEC, BAAQMD) with which it is partnered. SVCE's strong connections to cities in Santa Clara County also positions it to "grease the skids" for involvement of those cities in supporting the Milpitas project and promoting follow-on systems locally.

The Milpitas PRT project also presents a unique opportunity for SVCE to experiment with distributed storage of electricity at each of the PRT stations.

EQUITY IN SERVICE* (200 word limit)
Describe how this project will reflect the diversity of our customer base and geography.

While nearly all publicly-owned transit systems charge fares and lose money, LoopWorks seeks to provide free rides to users and pay for unusually low O&M expenses with alternative revenue streams. The equity impact of free rides is obvious; the most marginalized people are the least likely to own cars and thus rely most heavily on transit. And for those who count on it, transit is at least as vital as other services that cities are expected to fund entirely through tax revenue, from parks and libraries to schools and police forces.

LoopWorks intends to offer free transit service which will increase equity and, more importantly, increase ridership. The traditional mass transit option - buses - capture a modal split in most U. S. cities that hovers around 3% of all trips. Estimated ridership on a PRT system ranges from 25% to greater than 50% of the daily trips, a huge increase!

EMISSIONS IMPACT* (200 word limit)
Describe how this project will help SVCE achieve its emissions reduction targets.

Like SVCE, LoopWorks is working to reduce greenhouse gas emissions from the transportation sector of our society. GHG reductions is the imperative challenge of our time. Air quality data resulting from the COVID-19 shelter-in-place order and attendant reduction in automobile use shows what can be accomplished in a very short time.

The LoopWorks PRT project will play a vital role in this decades-long endeavor. In addition to leveraging a unique form of PRT technology, LoopWorks will use an innovative legal structure and financing plan to build an exemplary transit system that runs on clean electricity. More importantly, the data and knowledge acquired will support development of other advanced transit systems per our Vision: *The LoopWorks PRT project inspires rapid adoption of advanced transit that dramatically reduces transportation sector emissions.*

Using electric-motive force rather than fossil fuel combustion to move vehicles allows use of carbon-free, renewable energy sources. The highly efficient, non-stop trips provided by PRT use about 90% less energy than cars. That efficiency, combined with a dramatic increase in public transit ridership, will substantially reduce greenhouse gas emissions in the area served.

SCALABLE & TRANSFERRABLE* (200 word limit)
Describe how this project could be scaled across SVCE and expanded and adapted by others.

The LoopWorks PRT transportation solution can be expanded and adapted by others. As a Benefit Corporation committed to full transparency and data reporting, LoopWorks expects its results to transform public transit and possibly displace the automobile as the preferred transit mode in the areas it serves.

The Milpitas PRT project will provide a new model for future transportation projects. The data and the knowledge gained from building this first PRT system will provide transit experts, decision-makers and market actors with real-world data that will be useful in sparking, refining and strengthening future advanced transit projects.

Replication and scaling, so necessary to reversing Global Warming, is what the LoopWorks project promises. **It can grow locally, be replicated virally, and scale to serve large metropolitan areas.** This local system can grow to serve most of Milpitas. The technology can be replicated most anywhere experiencing congestion problems. And PRT can scale from a simple crossing of a creek through small-area coverage (as envisioned for Milpitas) all the way up to serve a large metropolitan area like San José.

Because the need for PRT lies in every corner of the world, the estimated market is over $1 trillion.

FOCUS AREA – RESILIENCE (200 word limit)
If applicable, describe how your project contributes to SVCE's goal to enhance community resilience. Note that SVCE will still consider applications that are not resilience-focused.

PRT transit offers redundancy and resilience to a community in these ways:

1. Mobility is electrified and transformed to reduce emissions, reduce congestion and save user time.
2. EV use by low-income customers and those living in multi-unit dwellings becomes easier without concerns about capital costs and charging of privately-owned cars.
3. PRT provides safe and reliable transit that complements and supports other forms of transportation.
4. In addition to transporting people, PRT can move packages, cargo, recyclable materials and garbage.
5. As an elevated system, PRT can continue operating in the event that the flood plain on which it is build actually floods.
6. Conduit space within the guideway structure provides alternative electric and broadband utility paths through the Transit Area of Milpitas.
7. If SVCE plans to distribute energy-storing batteries in an area, siting them at PRT stations is a possibility.

CUSTOMER PRIVACY* (200 word limit)
Discuss whether the project involves customer data, and if so, how you would address customer data confidentiality.

With the intention to provide free rides to users, LoopWorks PRT does not expect to collect data on specific customers. As data points in various surveys, people will be counted and reported anonymously. In particular, Loopworks will be interested in 1)

user reports about ride comfort, and 2) data on time-of-day usage rates for vehicles, stations and the entire system.

LOGIC MODEL*
Please submit a completed one-page Logic Model using the Logic Model template provided. For additional guidance, please see an example of a completed Logic Model, as well as the Logic Model "cheat sheet".
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http://sunnyhillsneighborhood.org/SVCE-grant-model.pdf

ACCEPTANCE OF CONTRACT TERMS*
Indicate your acceptance of or exceptions to the terms and conditions of the standardized partnership agreements.

Given its intention to be fully transparent, LoopWorks is fortunate to join SVCE in openly sharing information.

Acknowledgement of the California Public Records Act *
Indicate your acknowledgement that SVCE is a public agency subject to the requirements of the California Public Records Act, Cal. Gov. Code section 6250 et seq. ("CPRA"). Applications received through Innovation Onramp are subject to public disclosure, with the exception of those elements in each proposal which are exempt from disclosure pursuant to the CPRA.

LoopWorks acknowledges and approves of SVCE complying with CPRA.

ADDITIONAL INFORMATION*
Please submit any additional files that may help the evaluation panel better understand your proposal.

LoopWorks PRT project overview:
http://www.sunnyhillsneighborhood.org/poster.html

LoopWorks business plan:
http://www.sunnyhillsneighborhood.org/business-plan.pdf

PRT Videos: http://www.sunnyhillsneighborhood.org/crossing.html#videos

PRT Hardware Pictures: http://sunnyhillsneighborhood.org/hardware.html

Letters of Support for the Project: http://sunnyhillsneighborhood.org/mou-support.html

Survey and Comparison of Transit Modes: Transportation Options Through a PRT Lens offers an introduction to various transit factors.
http://sunnyhillsneighborhood.org/transit-primer.pdf

Transit Area Traffic Analysis looks at 2019 congestion conditions and trends in the area around the Milpitas BART transit hub.
http://sunnyhillsneighborhood.org/traffic-analysis.pdf

*Indicates a required field