Middlefield Smart Corridor Narrative for Redwood City Community

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Discussion

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Middlefield Road Vision

The Middlefield corridor is a lively street for North Fair Oaks residents. It is a safe, vibrant and friendly gathering place for the local community to come together to hang out with friends and family, shop, dine and conduct business.

Smart city technology, data and innovation will contribute to the sense of community, augment the resident and community user experience, and reinforce the outcomes desired by the community.
The Middlefield Road Experience

**Economic Development**

“I can see how many potential customers are walking past my business on Middlefield Road.”

“I am going to create promotions at the busiest time of the day to attract them.”

**Arrival**

“Greener pastures awaits as I find hassle-free parking for my bike or car with my way-finding mobile app and digital signage!”

“No more driving in circles. Saves time and gas!”

**Connect and Engage**

“I don’t have Internet at home, so I come here to connect to SMC Public Wi-Fi. It’s been a lifesaver!”

“The smart kiosks are great! I use it to learn about community news, local businesses, access county services, apply for a job, and report some problems.”

**Health and Safety**

“I always feel safe here, even at night.”

“My kids and I walk and bike here all the time. Even during the busiest times of the day, we worry less about accidents.”

**Data Driven Policy**

“The County now has access to more data that will lead to better informed policy decisions!”

“The Middlefield Road Dashboard provides important live data on street safety and Air Quality. That’s transparency!”
The Middlefield Road Experience (Smart Solutions)

- Smart Parking
- SMC Public WiFi
- Smart Trash
- Digital Bus Stop
- Pedestrian Analytics
- Community Fiber Network
- Smart Streetlights
- Air Quality Monitor
- Traffic Monitoring
- Smart Bench
- Smart Kiosk/Digital Signage

The Middlefield Road Experience (Smart Solutions)
The Middlefield Road Experience

**Economic Development**
- Smart Kiosks/Digital Signage
- Smart Benches
- Smart Trash
- Pedestrian Analytics

**Arrival**
- Smart Parking
- Digital Bus Stop
- Smart Kiosks/Digital Signage
- Vision Zero- Traffic Monitoring

**Connect and Engage**
- Community Fiber Network
- SMC Public WiFi
- Smart Kiosks
- Digital Signage
- Smart Benches

**Health and Safety**
- Air Quality (AQ) Monitoring
- Vision Zero-Traffic Monitoring
- Smart Streetlights

**Data Driven Policy**
- Smart Streetlights
- Air Quality (AQ) Monitoring
- Smart Corridor Dashboard
For more information

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Smart Solution Details For Your Reference (Appendix)
The **SMC Community Fiber Network** will provide the backbone for wireless connectivity for people and things (Internet of Things – IoT).

**Benefits:**
- Creates the connectivity backbone for the expansion of the SMC Public Wi-Fi network
- Powers county applications for health, environmental, vision zero and smart mobility
- Future proofs the County’s connectivity needs for future applications
- Long-term cost savings for the County by leveraging county-owned infrastructure and not leasing lines from traditional providers

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![Image of construction site with workers and orange cones]
The **SMC Public WiFi** network will provide an accessible connectivity option for those on Middlefield Road.

**Benefits:**

- Bring connectivity to underserved communities
- Support educational opportunities for students
- Spur local economic development
- Provide greater access to County services
- County-owned Wi-Fi provides alternative connectivity option at no cost to the community
- Platform to conduct pedestrian analytics

“I can get online to make my appointments and talk to my family thanks to the SMC Public WiFi offered on Middlefield Road. I can facetime with my Mom using the WiFi and show her the new streetscape.”
Arriving on Middlefield Road

**Smart Parking** allows the public to see real-time information on the status of the parking on Middlefield Road and find available spots from their mobile devices or digital signage.

**Benefits:**
- Increased accessibility for disabled drivers who can see if accessible spots are open before making a trip
- Promotes EV travel by showing available charging spots
- Reduces idling and traffic when looking for spots
- More EVs and less traffic= improved local air quality

“**I love being able to have the piece of mind that there are available parking spots before I drive down Middlefield road to run my errands.”**
Smart Kiosk/Digital Signage provides those visiting Middlefield Road with real time information ranging from weather and AQ stats, bus arrivals, COVID-19 updates, localized promotions, important alerts, etc.

Benefits:
- Increased community engagement
- Real time information and communications
- Local event calendars
- City social media feeds
- Potential for revenue and economic development through ads (optional)
- Pedestrian analytics
- Transit information
- Solar powered

“The new digital signage on Middlefield Road has allowed me to access information about my community I did not know was possible!”

*Photo is not of final proposed smart kiosk design, simply a reference*
Digital Bus Stop provides those waiting for a bus with real-time departure information, instant alerts, public service announcements, and points of interest from a 13-inch solar powered screen.

**Benefits:**
- Real time departure information
- Instant alerts of service changes, delays, or PSAs
- Easy deployment based on solar power
- Wireless connectivity
- Energy Efficient
- Convenience for the public

“The digital bus stop showed that my bus was running late, and I was able to adjust my meeting schedules to accommodate for this. Having real time information about my travel time is how it should be.”
Smart and Solar Benches provides visitors of Middlefield Road with a place to sit and enjoy the new streetscape and charge their mobile devices.

Benefits:
- Give your feet a break
- Provide power outlet to those needing to charge
- Power source for community events
- Dwell time data

“I am spending a lot more time on Middlefield Road since their redesign. The new benches are cool because I can work from my tablet and charge it while I am in between meetings.”

*Photo is not of final proposed smart bench design, simply a reference
Smart and Solar Powered Trash Cans indicate the level of garbage currently in the can from a smart dashboard used to optimize collection times and preventing overflows.

Benefits:
- Prevents garbage overflows
- Provides alerts on level of trash
- Allows maintenance to empty only when necessary
- Could save on labor and fuel costs
- Share County messages
- Customizable wraps for exterior
- Meets County’s sustainability standards

“It is so great not seeing trash overflowing on the streets.”
Smart Streetlights can be controlled on demand to adjust brightness and are able to indicate when there is a need for service or replacement.

Benefits:

- Brightness can be turned up to increase nighttime visibility, safety in higher crime areas, weather conditions and emergency responses
- Can be dimmed to reduce light pollution
- Dimming the streetlights at periods of the night when the streets are empty. This results in an additional 10 to 15% savings in electricity usage.

“We are saving money having the lights dimmed late in the night and being able to know what lights need are attention is saving us lots of time we would spend traveling to inspect each light.”
Health on Middlefield Road

Air Quality Sensors provide localized Air Quality (AQ) readings to an online dashboard accessible to the public.

Benefits:
- Creates awareness of hyper-local AQ data and related health impacts
- Allows public to see real time AQ information
- Can provide alerts of unhealthy air quality levels
- Can be matched with traffic analytics to show trends of poorer air quality during commute times
- AQ data can be used by policymakers, DPH and the Office of Sustainability to create regulations, treatment and preventative health programs

“It is cool to think that when I am on my morning walk down Middlefield Road, I can now see the quality of the air I am breathing.”
Pedestrian, Bike and Traffic Data: Vision Zero

**Traffic Monitoring** scans the traffic patterns of pedestrians, bicycles, and vehicles using Lidar and other sensors to create a digital dashboard of traffic activity and patterns.

**Benefits:**
- Helps governments maintain safe streets in specific areas
- Key metrics like signal and arterial performance measures
- Optimize traffic to enhance intersection capacity
- Predict unusual traffic behavior with trend analysis before near accidents
- Collab with C/CAG and Transportation Working Group
- Data based countermeasures

“My kids and I walk and bike here all the time. Even during the busiest times of the day, we worry less about accidents.”
Pedestrian Analytics uses SMC Public WiFi access points to determine non-identifying pedestrian traffic patterns in the area.

Benefits:
- Insights into foot traffic patterns and dwell time
- Economic development possibilities
- Dynamic real-time data
- Potential to compare with smart parking data
- Office of Community Affairs use potential
- Helps to determine high flow areas for targeted messaging

“I can see how many potential customers are walking past my business on Middlefield Road.”
The Middlefield Smart Corridor Dashboard collects all the data from smart systems of the corridor: Air Quality, Public WiFi usage, Parking, Mobility, Smart Trash Disposal, Connected Streetlights and allows for a holistic approach to understanding the street.

**Benefits:**

- Data can be used to optimize system performance or combined for integrated outcomes
- Optimization creates savings
- Data can be displayed on a series of dashboards
- Better insights allow better decision making
- Transparency in government service

“I am able to see all the smart systems we have deployed across Middlefield Road. The piece of mind of real time alerts and the insights providing from the systems are allowing us to create a safer, healthier, and more efficient Middlefield Road.”