FUTURE
CONDITIONS
SUPPORTING
FIGURES

G

Future Conditions Appendix
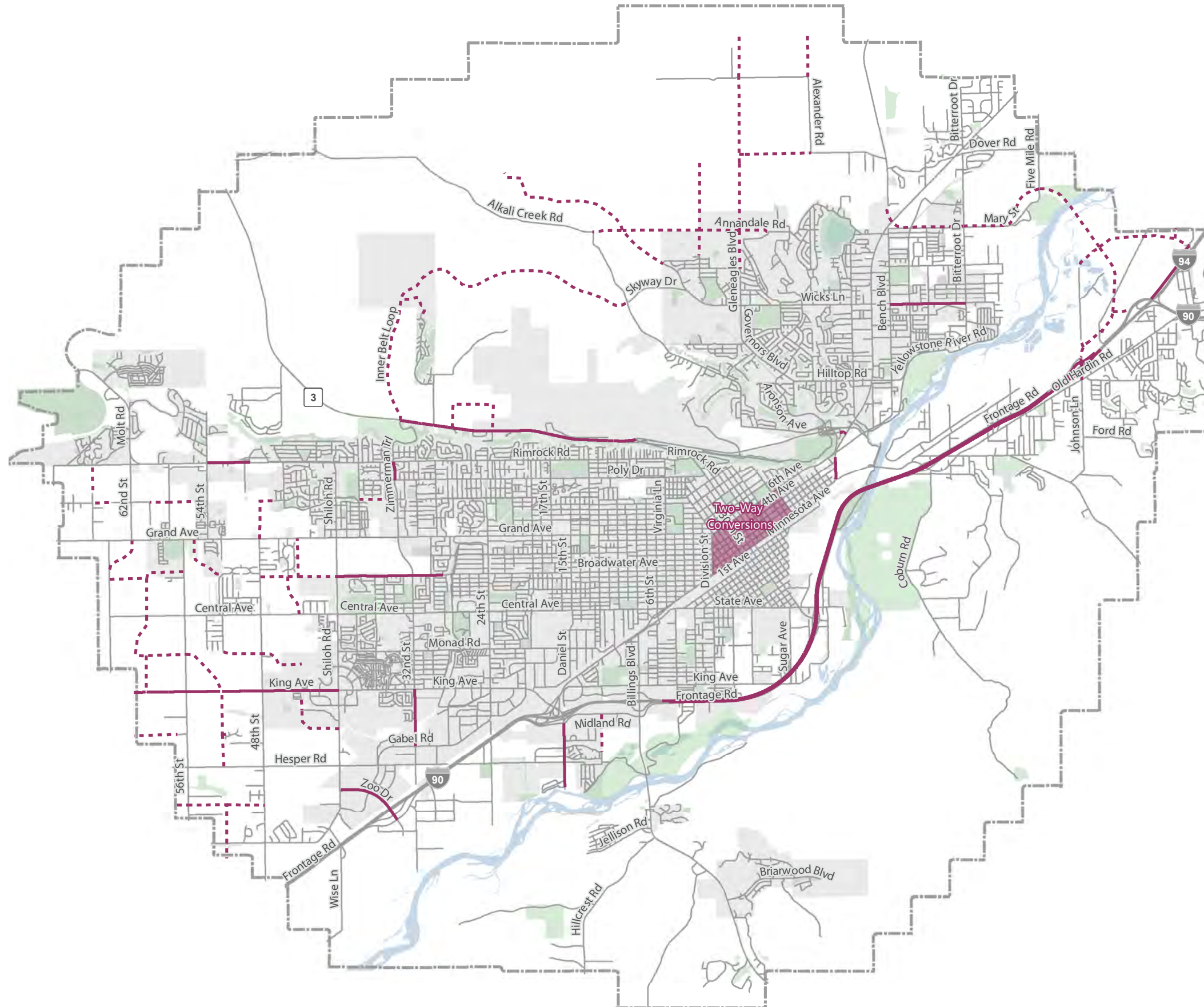
TRANSPORTATION

Future Traffic Volumes

**Travel Demand Model
Year 2045 Roadway Network**

- - - New Roadway
—— Roadway Widening

Transit

Table 1. Future MET Transit Routes

Route	Redesign Route Changes
Airport	The route will not operate as a circulator through downtown Billings.
3	The new Route 3 will mirror the existing route with small changes in downtown to provide coverage.
5 A/B	Becomes singular, bidirectional Route 5 to improve legibility. Route 5 will no longer run in Shiloh Rd corridor, but travel on Zimmerman Trail and 32 St W. Access to/from downtown would be through the medical corridor on N 30th Street.
7	Route 7 (Broadwater) will follow mostly the same route. It would not travel as far west as Shiloh Rd and provide sone service north of Broadwater Ave on Colton Blvd and Grand Ave. to access Will James Middle School.
9	The new Route 9 (Central) will cover the same area as the old route with bidirectional service, except for some rerouting in the South-Central neighborhood to provide adequate coverage.
10	The new route 10 (Southside) will cover generally the same area as the current Route 10 but it would serve part of the South-Central neighborhood where Route 19 currently covers. West of Laurel Road, the new Southside would take a more direct route to Stewart Park Transfer Center.
13	The new Route 13 (Westend) is a simplified and shorter version of the existing route that will travel in a clockwise loop starting from Stewart Park Transfer Center, serving Shiloh's Crossing and other retail locations West of S Shiloh Rd.
14	Route 14 (Alkali) will suspend service, with most area replaced by other modified routes.
15	Route 15 (Hilltop) will suspend service, with most area replaced by other modified routes.
16	The new Route 16 will be one of two routes serving Billings Heights. This short route will provide fast and frequent (every 30 minutes) service from the Heights to downtown Billings.
17	Route 17 (Bench) would suspend service, with most area replaced by other modified routes.
18	Route 18 (Heights) would change to a bidirectional "circulator" traveling across Billings Heights. Access to other routes in the network would be provided through the higher frequency Route 16.
19	Route 19 (The Loop) would provide more service south and southwest of downtown while expanding west toward Stewart Park Transfer Center.
24	Route 24 (Poly) would suspend service, with most area replaced by other modified routes.

*Source: MET Transit*

KITTELSON & ASSOCIATES

TRANSIT CORRIDORS PROJECTED TO EXPERIENCE FUTURE CONGESTION

As outlined in the ***Error! Reference source not found.*** section, there are multiple corridors that are projected to be congested during the PM peak period in the year 2045. These congested corridors correspond with several future MET routes, including:

- Route 5 and Route 7 along Grand Avenue
- Route 10, Route 13, and Route 19 along King Avenue
- Route 16 along Main Street

Exhibit 1 displays the future routes and congested corridors. These routes could potentially benefit from technology and infrastructure upgrades to improve transit service at signalized intersections and along congested corridors, such as transit signal priority, queue jumps, and bus-only lanes. These treatments could be explored in a future study once the future MET transit system is implemented.

Exhibit 1. Projected Congested Intersections Along Future MET Transit Routes
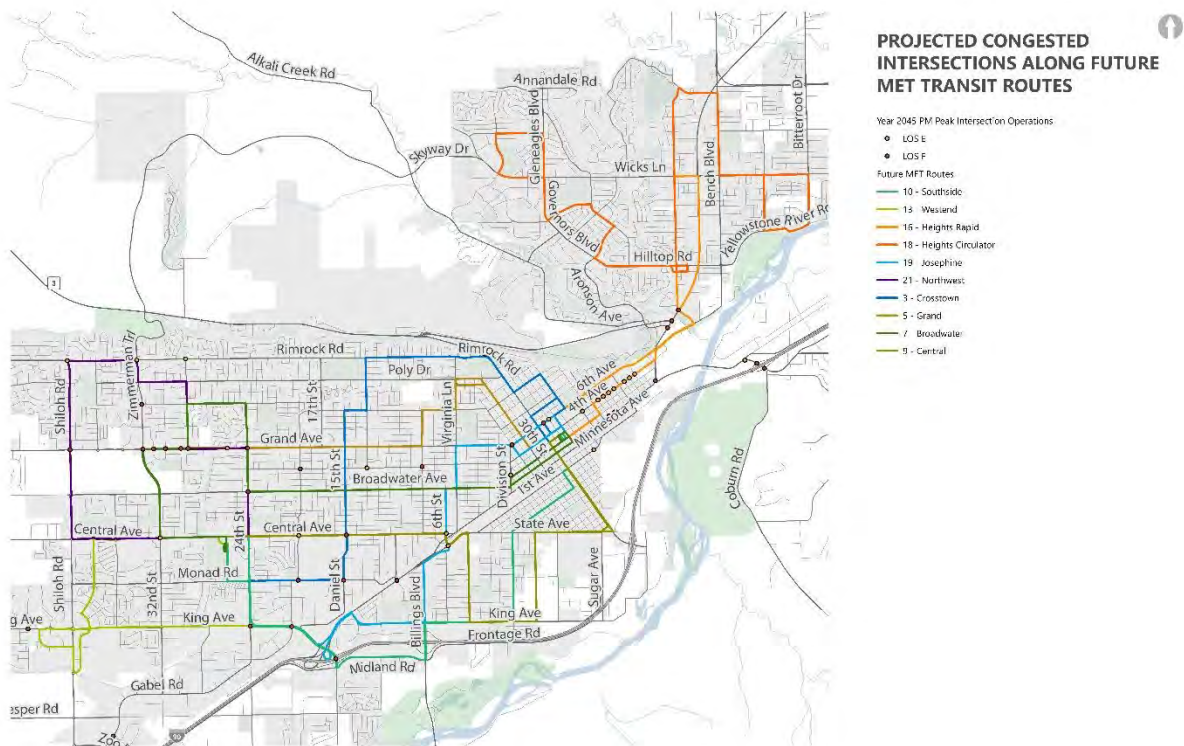
EMERGING TECHNOLOGY

Mobility as a Service

If implemented, micromobility could be one part of the urban shared mobility system, complementing MET Transit services, ridehailing and carsharing services, and electric vehicle charging. Integrating these mobility options through a digital platform into one cohesive system that facilitates multimodal trips is termed 'Mobility as a Service' or MaaS. MaaS enables transportation system users to plan, book, and pay for multiple types of mobility services through a common application. As transportation systems become increasingly digital, developing mobility services to facilitate quick, safe, and affordable trips can further incentivize transportation system users to choose low carbon modes of transportation. Best practices to include when considering MaaS[1]:

- Prioritize interoperability between modes of transportation.
- Facilitate communication between public and private providers.
- Encourage innovation, openness, and inclusivity in design.

Smart Infrastructure & Digital Twins

Utilizing high-speed connectivity, many cities are piloting and building 'smart infrastructure' that allows for real-time data collection and analysis to inform decision-making that better serves citizens seeking public services. Smart infrastructure is simply regular infrastructure that is equipped with connectivity (through closed Wi-Fi networks, cellular networks, or fiber optic networks) and sensors tailored to their functions, such as radar, cameras, temperature, pressure, moisture, etc. Smart infrastructure allows for continuous data collection, which in turn can be analyzed by partner agencies or through cloud-computing to produce data-driven insights. These key findings can then be utilized to better provide key urban services, such as:

- Automated Traffic Detection & Coordinated Signal Timing
- Transit Signal Priority & Bus Rapid Transit
- Power Grid, Water Quality, and Sewage System Monitoring
- Efficient Waste Management

Digital Twin: A virtual model of real-world assets (such as roadways, bridges, buildings, streetlights, vehicles, waste management, power systems, etc.), as well as processes, behaviors, and relationships, that is used to create, monitor, and maintain the infrastructure.

When combined, these individual detection, monitoring, and analysis systems can be combined into a Digital Twin, which integrates all these urban components into one model. The regular exchange of data between digital and physical twins through their shared lifecycles could empower planning partners to learn from the digital twin ecosystem and evolve policies and services over time. This would enable the whole urban area to anticipate and respond to security hazards such as wildfires, floods, blizzards, and pandemics, while also empowering the efficient use of resources towards sustainability and resiliency goals.

---

[1] MaaS Alliance. (September 2017). *Guidelines & Recommendations to Create the Foundations for a Thriving MaaS Ecosystem*. https://maas-alliance.eu/wp-content/uploads/sites/7/2017/09/MaaS-WhitePaper_final_040917-2.pdf