Note: Anyone wishing to speak at any Transportation Commission meeting is encouraged to do so. If you wish to speak, please rise and, after you have been recognized by the Chair, give your name and complete address for the record. You will then be allowed to speak. Please note the public testimony may be limited by the Chair.

ASHLAND TRANSPORTATION COMMISSION
January 21, 2020
AGENDA

I. **CALL TO ORDER:** 6:00 PM, Meeting held virtually via Zoom

II. **ANNOUNCEMENTS**

III. **CONSENT AGENDA**
   A. Approval of Minutes: December 17, 2020

IV. **PUBLIC FORUM** (6:05-6:20)
   A. Public Forum-if you wish to speak during public forum please register with Shannon.burruss@ashland.or.us by 10am January 20th.
   B. If you wish to provide public comment or discuss an agenda item please contact Shannon.burruss@ashland.or.us by January 20th by 10am to register to participate. Written comments can also be submitted in the same time frame.
   C. If you are interested in watching the meeting via Zoom please utilize the following link: https://zoom.us/j/97763186113

V. **ACCIDENT REPORT** (6:20-6:30)

VI. **NEW BUSINESS**
   A. Transportation Commission Council Presentation (6:30-6:45, action required, discuss Council presentation information and outline)

VII. **OLD BUSINESS**
   A. "20 Is Plenty" Update (6:45-7:15, action required, review and discuss "20 Is Plenty" report)
   B. Capital Improvement Program (7:15-7:45, action required, review draft 20-year Capital Improvement Program).

VIII. **TASK LIST** (If time allows)
   A. Discuss current action item list

IX. **FOLLOW UP ITEMS**
   A. Bike Map Development
   B. Faith Avenue Traffic Calming

X. **INFORMATIONAL ITEMS** (If time allows)
   A. None

XI. **COMMISSION OPEN DISCUSSION** (If time allows)

XII. **FUTURE AGENDA TOPICS**
   A. Street User Fee/Gas Tax (budget process)
   B. Demand Response Microtransit pilot project update (February)
   C. Bus Pass Program
   D. Crosswalk Policy

XIII. **ADJOURNMENT:** 8:00 PM

Next Meeting Date: February 18, 2021 Meeting

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Public Works Office at 488-5587 (TTY phone number 1 800 735 2900). Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to the meeting (28 CFR 35.102-35.104 ADA Title I).

CITY OF ASHLAND

CITY OF
ASHLAND
Transportation Commission
Contact List as of March 2020

Name	Title	Telephone	Mailing Address	Email Address	Expiration of Term
Mark Brouillard	Commissioner	206-661-7085	159 Helman St	mtbrouillard@msn.com	4/30/2020
Joe Graf	Commissioner	541-488-8429	1160 Fern St.	jlgtrans15@gmail.com	4/30/2021
Corinne Vièville	Commissioner	541-488-9300 or 541-944-9600	805 Glendale Ave.	corinne@mind.net	4/30/2022
Derrick Claypool-Barnes	Commissioner	503-482-9271	1361 Quincy St #6F	dorkforest@gmail.com	4/30/2021
Linda Peterson Adams	Commissioner	541-554-1544	642 Oak St	gardengriotashland@gmail.com	4/30/2022
Katharine Danner	Commissioner	541-482-2302	PO Box 628	ksdashland@gmail.com	4/30/2022
Bruce Borgerson	Commissioner	541-488-5542	209 Sleepy Hollow Dr	wave@mind.net	4/30/2020
Non-Voting Ex Officio Membership					
Scott Fleury	Interim Director, Public Works	541-488-5587	20 E. Main Street	scott.fleury@ashland.or.us	
Shaun Moran	Council Liaison		20 E. Main Street	Shaun.Moran@council.ashland.or.us	
Brandon Goldman	Planning Department	541- 488-5305	20 E. Main Street	goldmanb@ashland.or.us	
Steve MacLennan	Police Department	541- 552-2433	20 E. Main Street	maclenns@ashland.or.us	
Vacant	SOU Liaison	541-552-8328	1250 Siskiyou Blvd		
Dan Dorrell, PE	ODOT	541- 774-6354	100 Antelope Rd WC 97503	Dan.w.dorrell@odot.state.or.us	
Edem Gómez	RVTD	541-608-2411	3200 Crater Lake Av 97504	egomez@rvtd.org	
Jenna Stanke	ODOT	541- 774-5925	100 Antelope Rd WC 97503	Jenna.MARMON@odot.state.or.us	
David Wolske	Airport Commission			david@davidwolske.com	
Vacant	Ashland Parks				
Vacant	Ashland Schools				
Staff Support					
Scott Fleury	Public Works Director	541-488-5347	20 E. Main Street	Scott.fleury@ashland.or.us	
Karl Johnson	Associate Engineer	541-552-2415	20 E. Main Street	johnsonk@ashland.or.us	
Shannon Burrus	Permit Technician	541-552-2428	20 E. Main Street	Shannon.burrus@ashland.or.us	

ASHLAND TRANSPORTATION COMMISSION
MINUTES
December 17th, 2020

These minutes are pending approval by this Commission

CALL TO ORDER: 6:03pm

Commissioners Present: Mark Brouillard, Joe Graf, Corinne Vièville, Linda Peterson Adams, Katharine Danner, Bruce Borgerson, Derrick Claypool-Barnes
Commissioners Not Present- None
Council Liaison Not Present: Julie Akins
Staff Present: Scott Fleury, Shannon Burruss
Guests Present: None
ANNOUNCEMENTS - None

CONSENT AGENDA
Approval of Minutes 11.19.20
Vièville motions to approve with grammar correction, Danner seconds.
Commissioners approve minutes as amended.
All ayes. Minutes approved.

PUBLIC FORUM
None.

ACCIDENT REPORT: Peterson Adams asks Officer MacLennan for his opinion on lowering traffic speeds within the City by 5mph, and how APD would feel about enforcing those speeds. MacLennan states that while lowering speeds in residential areas would likely not be a problem, he anticipates that it could cause traffic issues on main streets like Siskiyou. He does not have a comment on enforcement of said speeds.

Officer MacLennan presents Traffic Accident Report contained in Agenda Packet. MacLennan also mentions an accident that is not included in the report. A female was struck while crossing against the pedestrian light at Tolman and Ashland Street. She was struck by a truck who was making a legal turn, she was injured quite badly. Peterson Adams mentions that accidents like this should be taken into consideration when the Commission develops educational campaigns for traffic issues and safety. MacLennan mentions that bicyclists and pedestrians are frequently at fault, he believes this is often due to misinformation rather than intentional breaking of traffic and safety laws.

NEW BUSINESS

A. **Community Path Program Grant Application-** Fleury goes over the breakdown of the program as laid out in Commission Agenda. Fleury requests that Transportation Commission write a letter of support to be submitted with application, draft copy included in packet.

Vièville makes Motion for a letter of support and to authorize the chair to sign said letter of support for the grant application. Danner Seconds.

Discussion: Graff points out that Orchid Street is misnamed in TSP as Orchid Ave, and clarifies where the path would be built, he's concerned about spending money on a path where there is already one nearby, and wonders if another location would be a better way to spend the grant money and limit redundancy. Commission discusses usage of current pathways. Borgerson wonders of the benefits. Fleury relays that a new path provides an additional

These minutes are pending approval by this Commission

connection for the people on the north side of the path and prevents people from having to go back and forth on the train tracks, commission discusses. Commission discusses possible connections to activity centers and facilities and the areas they perceive as problem connections within the City. Graff mentions that without COVID the Commission would be meeting to update their TSP, and grant funding can help inform and refine planning within the TSP. Commission looks forward to reading studies and gaining more information on the topic. Vièville requests that language in the application grant allow for different locations in addition to the current proposal.

All Ayes- Motion Carries.

B. **Faith Avenue Traffic Calming-** Fleury relays gathered information contained in the agenda packet and relays the history of traffic calming measures on Faith. He relays that as of yet he has not reached out to the applicant with the information gathered. Fleury recommends that this could be part of the Twenty is Plenty project category. MacLennan relays that APD had the radar trailer on Faith street six weeks prior, he had complaints from neighbors in three separate trailer locations, and informs Commission that there is increased officer presence in the neighborhood which could throw off any new data for traffic. Brouillard would like to support Claypool-Barnes initial idea of adding sidewalks to the score card for traffic calming. Fleury states that sidewalk construction can be added to the CIP and have a future discussion about adding components as necessary to the Traffic Calming Program. Borgerson supports the addition of sidewalks as a priority component in Traffic Calming score. Peterson Adams asks that the topic be added as a future agenda item. Graff calls for a potential overhaul of the Traffic Calming Program regarding the importance of overall safety rather than just speed. Commission discuss perspectives on safety. Commission asks City Staff to respond to applicant with findings and other programs that the Commission is exploring to address the applicant's concerns, such as the previously mentioned Twenty is Plenty.

Old Business-

A. **Capital Improvement Program:** Fleury provides background and general information contained in agenda packet along with the most recent information, adjustments will be made as information contained is a rough draft and discussions will continue in the future, Fleury provides a brief overview of the various projects contained therein. Fleury will ask for Commission's recommendations on prioritizing projects by February 2021. Fleury presents Commission with Capital Project Review Dashboard. Peterson Adams references previous conversations about additional emergency exits and secondary egress installations being added as CIP projects. Commission discusses emergency assess options. Commission also discusses details of current projects within the CIP. Fleury would like Commission to review what is provided and to make recommendations to have discussions about inclusion of various projects, and to review study requests in TSP to add to a six-year plan. Linda Peterson Adams recommends evacuation study and its integration into TSP and CEEP.

B. **Bike Map Subcommittee:** Claypool-Barnes states he's been canvasing for participation with this project by the public, at bike shops and other similar locations with no success. Fleury brings up a previous conversation with Claypool-Barnes and the reinvention of the Bike Share program and Bike Safety Program. Commission discusses previous conversations regarding this subject. Claypool-Barnes suggests that the subcommittee first agree on an ideological framework for the Bike Map, and believes the Commission should come up with a mission statement, then form the subcommittee. Graff requests that the predominate bike riders in the Commission write a rough draft and bring it to the group. Claypool-Barnes states that he believes that a rough draft could be agreed upon during a meeting. Claypool-Barnes is asked to put a draft together to present to Commission, he agrees to do so and asks other Commission members to be on the

These minutes are pending approval by this Commission

lookout for recruiting community members.

TASK LIST

A. Discuss current action item list- Fleury updates Commission on Action Item list found in agenda packet. Spoke about 20 is Plenty and Railroad District Signage.

FOLLOW UP ITEMS

A. **Terrace Street-Traffic Calming Response-** Previously Discussed.
B. **Water Street- Traffic Calming Response-** No update, Fleury states that after his last communication with the applicant he's not received any further correspondence.
C. **Vansant Stop Sign Request- Response**

INFORMATIONAL ITEMS- None

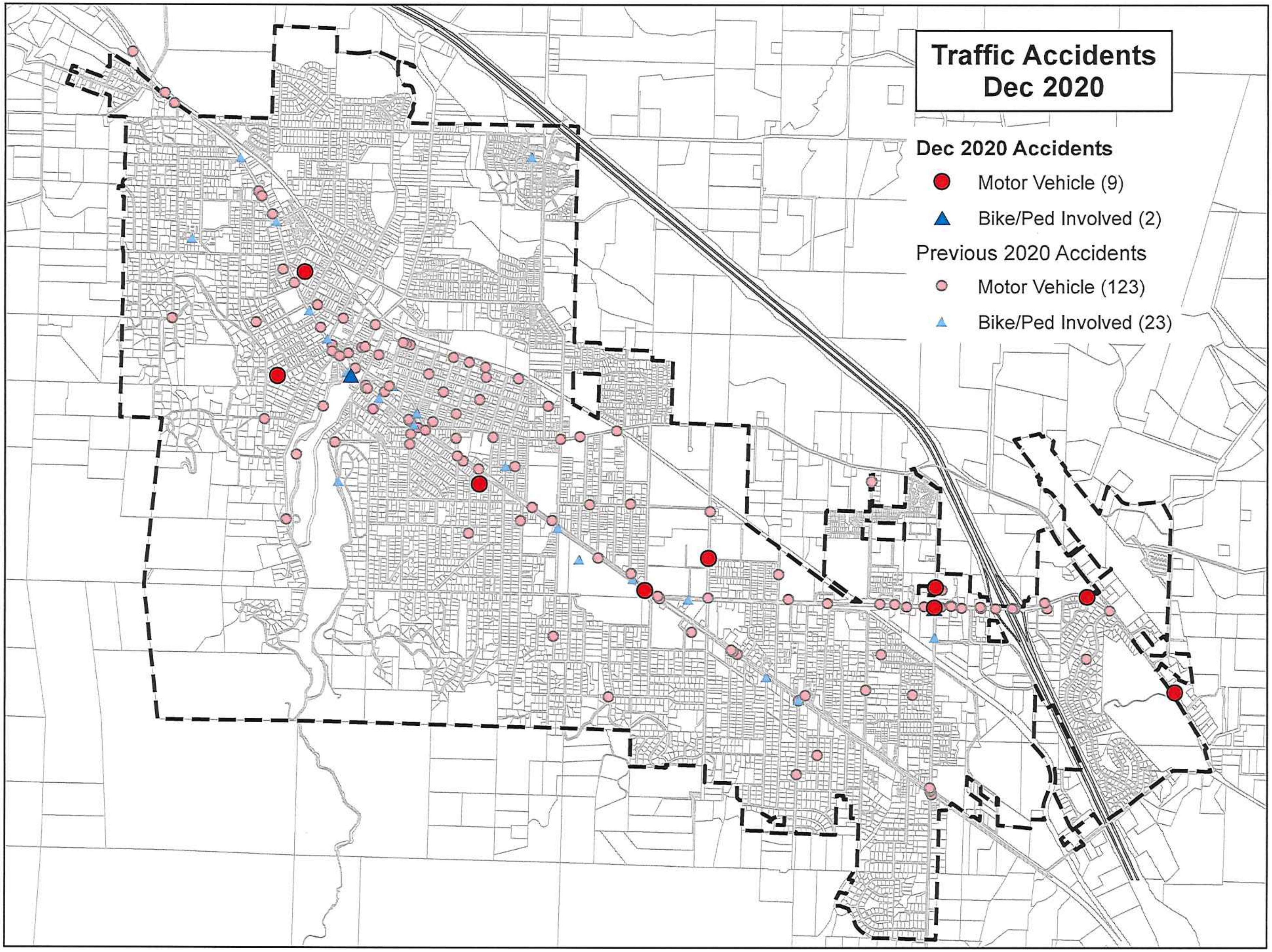
COMMISSION OPEN DISCUSSION- Graff points out that the Commission roster needs to be updated. Staff will do so.

FUTURE AGENDA TOPICS

A. Street User Fee/Gas Tax (Budget Process)
B. Demand Response Microtransit pilot project Update
C. Buss Pass Program
D. Crosswalk Policy

ADJOURNMENT: @ 8:00pm

Respectfully submitted,
Shannon Burruss
Permit Technician-Engineering and Public Works
*****Full Video Available by Request*****



Traffic Accidents
Dec 2020
Dec 2020 Accidents
Motor Vehicle (9)
Bike/Ped Involved (2)
Previous 2020 Accidents
Motor Vehicle (123)
Bike/Ped Involved (23)

MOTOR VEHICLE CRASH SUMMARY

MONTH: DECEMBER 2020 NO. OF ACCIDENTS: 11

Rep	DATE	TIME	DAY	LOCATION	NO. VEH	PED INV.	BIKE INV.	INJ.	DUI	Cited	Police On Site	PROP DAM.	HIT/ RUN	CITY VEH.	CAUSE - DRIVER ERROR
NR	2	0:00	Wed	Alley near Harrison St	2	N	N	U	U	N	N	N	Y	N	Parked vehicle was struck while parked, no leads nor suspects.
R	2	17:20	Wed	Tolman Creek Rd at Ashland St	1	Y	N	Y	N	Y	Y	N	N	N	Driver was making a left turn onto Tolman Creek Rd and had the right of way. Ped was crossing against light. DV struck ped, ped transported. Ped cited ftotcd.
NR	2	19:22	Wed	Church St near Scenic St	2	N	N	N	U	N	Y	N	Y	N	Vehicle struck while parked, no leads or suspects.
R	7	15:55	Mon	Highway 66 near Oak Knoll Dr	1	N	N	Y	N	N	Y	Y	N	N	Driver ran off the road and crashed into some trees due to losing conciousness in a medical event. Driver extracted and taken to RRMC
R	8	15:10	Tue	Tolman Creek Rd near Ashland St	2	N	N	N	N	Y	Y	U	N	N	Dv1 was driving south on Tolman Creek Rd when dv2 pulled out of grocery store driveway and crashed into the side of v1. Dv2 cited for failure to yield.
R	10	12:05	Thur	E Main St near Oak St	2	Y	N	P	N	N	Y	N	N	N	Driver on E Main St had stopped to allow a car to pull into lane from Oak St, then proceeded to move forward crashing into ped in crosswalk. Dv1 cited for failure to stop and remain stopped.
R	15	12:07	Tue	Ashland St at Tolman Creek Rd	2	N	N	P	N	Y	Y	Y	N	N	Dv1 was travelling SB with a green light through the intersection on Tolman Creek Rd. Dv2, a public bus, made a right turn on a red light and ran into v1. Dv1 possible injury, dv2 cited for failure to obey tcd.

Rep	DATE	TIME	DAY	LOCATION	NO. VEH	PED INV.	BIKE INV.	INJ.	DUII	Cited	Police On Site	PROP DAM.	HIT/ RUN	CITY VEH.	CAUSE - DRIVER ERROR
R	21	7:31	Mon	Ashland St near Sutton Pl	2	N	N	Y	N	Y	Y	Y	N	N	Dv1 EB on Ashland St. Dv2 attempted to pass a slower vehicle on a double yellow line with no vision clearance and crashed headon with V1. Both drivers transported, both vehicles totaled. DV2 arrested on multiple charges.
R	22	19:02	Tue	Siskiyou Bvd at Indiana	2	N	N	N	N	N	Y	Y	N	N	Dv2 was SB on a green light passing through the intersection to Indiana St. Dv1 failed to stop on the red light and crashed into the side of v2.
NR	23	21:09	Wed	Walker Av near Homes	2	N	N	N	N	N	N	N	N	N	Dv1 was backing up to turn around and backed into parked v2. Information exchanged, location approximate.
R	25	16:00	Fri	Van Ness Av at Skidmore St	2	N	N	N	N	N	Y	Y	N	N	Dv1 was WB on Van Ness. Dv2 NB on Skidmore did not stop at the intersection, and ran into v1. Dv2 warned for failing to obey a traffic control device.

YEARLY STATS:																		
	2020	2020	2019	2019	2018	2018	2017	2017	2016	2016	2015	2015	2014	2014	2013	2012	2011	2010
Total accidents:	157		231		217		221		205		187		159		115	134	113	99
"Reportable"	124	124	186	186	175	175	171	171	171	171	160	160	127	127	115	134	113	99
non-Reportable	33		45		42		50		34		27		32		none	none	none	none
Total accidents by month:	All	Reportable	All	Reportable	All	Reportabl	All	Reportabl	All	Reportabl	All	Reportabl	All	Reportable				
Jan	29	20	17	15	19	15	20	13	13	12	13	9	8	5	3	10	7	8
Feb	15	15	16	14	14	13	14	12	9	9	13	12	11	8	12	9	7	10
Mar	7	6	17	14	18	14	12	6	19	18	16	14	11	10	8	13	6	12
Apr	10	7	26	21	16	13	20	16	13	9	20	17	13	11	8	8	7	9
May	6	6	16	16	27	19	19	14	12	8	17	17	15	13	11	12	12	8
Jun	8	5	19	16	22	17	17	11	16	12	22	17	13	10	8	13	8	6
Jul	10	4	25	20	11	9	17	13	29	25	19	14	12	6	11	15	8	10
Aug	17	12	16	13	14	13	19	13	16	14	13	9	21	16	9	6	9	5
Sep	13	13	11	7	19	17	16	13	20	19	11	10	15	14	17	16	10	12
Oct	18	15	30	23	22	19	28	26	21	20	14	14	11	9	12	10	14	6
Nov	13	13	22	15	19	13	23	18	19	13	13	13	14	12	7	11	16	10
Dec	11	8	16	12	16	13	16	16	18	12	16	14	15	13	9	11	9	3
DUII	8	8	23	23	23	23	18	18	15	15	17	17	9	9	17	18	8	8
Ped involved (skateboard)	14	13	20	18	21	19	12	10	16	13	8	8	13	12	4	11	12	5
Ped Crossing in crosswalk	12	12	16	14	20	18	19	15	18	16	18	18	11	10	8	17	15	14
Bike involved	11	8	6	6	5	5	11	8	9	7	9	6	9	9	7	10	14	11
Injury to driver	24	24	36	33	18	16	15	15	18	18	17	17	20	20	19	22	12	6
Injury to bike/ped	17	14	14	14	10	10	11	8	13	12	10	10	14	14	7	13	15	15
Fatality	1	1	0	0	0		0	0	0	0	0	0	1	1	1	1	0	0
Hit and Run	23	16	32	26	35	27	36	21	31	18	29	25	19	13	16	29	12	14
Day of the Week:																		
Mon	24	19	40	28	26	16	31	24	28	22	33	30	18	18	19	11	13	21
Tues	27	18	37	32	47	36	39	31	31	25	22	19	20	17	21	21	19	20
Wed	21	15	49	39	32	29	35	24	26	21	26	21	34	19	20	24	21	11
Thurs	34	30	35	28	24	16	40	33	37	30	29	25	31	26	16	20	18	10
Fri	20	14	25	20	43	36	32	26	37	32	40	34	33	27	20	24	23	14
Sat	17	15	28	23	29	27	24	18	27	25	21	19	13	11	9	20	11	14
Sun	14	13	17	16	16	15	20	15	19	16	16	12	10	9	10	14	8	9

Memo

CITY OF ASHLAND

Date: January 12, 2021

From: Scott A. Fleury

To: Transportation Commission

RE: Council Presentation-February 2021

BACKGROUND:

Annually in February the Transportation Commission Chair is asked to provide a five (5) minute update/presentation to the City Council. This year the presentation is scheduled on February 5th (6 PM).

According to AMC 2.10.105, the requirements for the reports are:

- Give at least one report per year
- Focus on the Commission's accomplishments, work in progress, and planned activities
- Contain objective information and represented the majority views of the Commission members

Topics to consider:

Past:

1. Review and recommendations regarding parking restrictions, traffic signage and traffic control device requests
2. Traffic Calming Program Participation
    a. Program refinement planned
3. Grand Terrace Annexation review

Current/Future:

1. Transportation System Plan Update-start 2021
2. Bike map development project
3. New bike share program development (clean fuels credits)
4. 20 Is Plenty Program speed limit program
5. Transportation System Capital Improvement Plan review and recommendations for the 2021-2023 budget
6. Continued coordination with other City Commissions
7. Providing input on the evacuation time study and evacuation planning

CONCLUSION:

Commission should discuss and recommend items for the Chair to update the Council on. An outline of the presentation is required to be submitted to the City Administrator 12 days prior to the Council meeting.

Memo

CITY OF ASHLAND

Date: January 13, 2021

From: Scott A. Fleury

To: Transportation Commission

RE: 20 Is Plenty

BACKGROUND:

Before the Commission is an update on the "20 Is Plenty" program including the formally developed draft report on the benefits of reducing residential speed limits from 25mph to 20mph. The intent is to improve overall traffic safety and provide for additional multimodal opportunities through a speed reduction and bicycle safety feature improvements.

Previously a representative of the Climate Policy Commission provided the Transportation Commission with a presentation on the potential and associated requirements to reduce residential speed limits from 25mph to 20mph. A member of the Transportation Commission was requested to participate in the Climate Policy Commission subcommittee group to develop a report on a "20 Is Plenty" program for the City of Ashland. The report is meant to describe the benefits of a "20 Is Plenty" program for residential roadways and eventually be delivered to the City Council. Commissioner Brouillard is the participatory member of the subcommittee.

The subcommittees report and executive summary documents are attached for reference and were previously sent via email for review.

This subject matter has been a point of discussion by the Commission in recent months relative to the Traffic Calming Program and recommended bicycle boulevard conversions within the Transportation System Plan (TSP).

Recommendations from the report to the City Council include: directing Public Works to pursue reducing maximum speeds within the City to the maximum extent allowed by ORS 810.180 and requesting the Southern Oregon legislative delegation ensure that Ashland is included among the jurisdictions which would be empowered, as Portland currently is, to set speed limits on roadways under the City's jurisdiction pursuant to a reintroduced HB4103.

Discussion Questions:

1. Next Steps
    a. Include in TSP update a comprehensive process?
    b. Standalone process?
    c. Public outreach/input process?
        i. Engage Ashland
    d. Pilot projects vs full scale implementation?
2. Enforcement capabilities?
    a. Police outreach

3. Implementation and associated education?
    a. Process and materials
4. Monitoring parameters?
    a. Monitor or not
5. Enhancements/changes?

CONCLUSION:
Commission should discuss report and associated next steps/actions for the "20 is Plenty" program.

SISKIYOU
SOUTHERN VELO OREGON

January 13, 2021

To: Rick Barth, Climate Policy Commission
Linda Peterson Adams, Transportation Commission
Beca Walker, Conservation and Climate Outreach Commission

From: Harlan Bittner, President, Siskiyou Velo

The Siskiyou Velo bicycle club, incorporated in Ashland and representing 240 members, urges you to reduce vehicle speeds in the city to enhance bicycle and pedestrian safety.

Siskiyou Velo has long supported policies that make cycling safe for riders of all ages and abilities. Studies from across the country show that with a safe and convenient bicycle network, more people will choose to cycle--including currently underrepresented parts of our community such as people of color, women, children and seniors. More people cycling results in improved health among our citizens, reduced reliance on automobiles, cleaner air, increased tourism and a more vibrant economy. The same benefits also result from a safer and more comfortable pedestrian experience; lower traffic speeds encourage more people to walk.

There are many ways to increase bicycle safety—all need to be considered, including constructing safe bicycle facilities such as standard, buffered and separated bike lanes as well as dedicated bicycle paths. However, the least expensive and fastest method to improve bicycle safety is to reduce vehicle speeds. Both the frequency and severity of collisions between automobiles and bikes decrease dramatically with reduction of motor vehicle speeds. Similar findings apply to car/pedestrian collisions.

Siskiyou Velo strongly supports efforts to reduce maximum speeds in Ashland. Lower speeds contribute to safe and convenient bicycle and pedestrian networks and will significantly enhance the livability of our cities.

Harlan Bittner

Harlan Bittner, President
Siskiyou Velo

cc: Elizabeth Taylor

Evidence Demonstrating the Efficiency, Safety and Economic Benefits of Reduced Maximum Speed Limits - In Ashland, Oregon

Executive Summary

Oregon state government gives cities some flexibility in setting maximum speed limits (Oregon Revised Statutes 810.180). Ashland could take advantage of the law and, at the same time, make our community a better place to live and visit.

Reducing maximum speeds within Ashland will serve to:

- Reduce the incidence and severity of motor vehicle collisions
- Improve safety – especially for people walking and bicycling
- Increase mode share of bicycling and walking
- Reduce carbon emissions
- Reduce consumption of gasoline and expenditures on transportation by Ashland households
- Improve human health
- Reduce vehicle miles of travel
- Lower costs for road maintenance
- Improve social equity
- Increase the potential to attract remote workers (economic development)
- Reduce neighborhood noise

Only three of the above benefits can be monetized. But if Ashland were to make a commitment to lower maximum speed limits in a manner consistent with ORS 810.180 and enforce those speed limits adequately, it would stand to generate annual economic savings of more than $1 million. The estimated implementation cost is approximately $100,000.

Benefits Summary

Category / Source	Estimated Annual Benefits
Reduced incidence and severity of accidents	$764,212
Fuel savings (arising from mode shift)	$305,554
Carbon emissions reduction	$133,758
TOTAL BENEFITS	$1,203,524

The cost of changing speed limit signs, adding additional signage as required by Oregon law, and conducting related speed studies is estimated at $100,000, a one-time expense. Clearly, lower speed limits will slow the rate of travel. But the additional time that a slower maximum speed adds to a person's travel time is measured in seconds. This is a small price to pay for saving lives, money, and the planet.

Reduced Incidence and Severity of Accidents

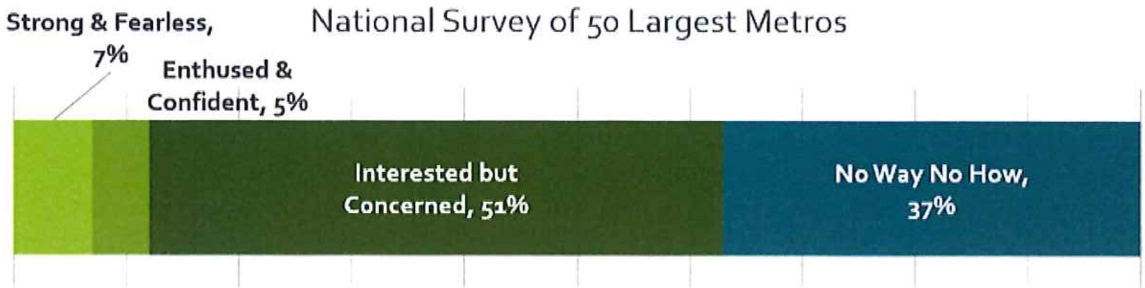
Slower speeds allow drivers more reaction time. Additionally, if a crash does happen at slower speeds, it is much less likely to result in serious injury or death. Traffic deaths do happen in Ashland. In fact, during the previous five years there have been two deaths. That is two too many. Ashland should ensure that there are zero deaths or serious injuries. Our community can achieve that outcome by lowering maximum speeds.

People walking and bicycling are vulnerable road users. If hit by an automobile, they often suffer serious injury. In fact, 14 percent of accidents in the City involved a pedestrian or person riding a bicycle. Lower speeds will, as noted above, reduce the number of collisions, and also the severity of injury. Children and seniors suffer more serious injuries when struck by an automobile (especially when hit by an SUV or pickup truck). In the hilly parts of town, above Siskiyou Boulevard and N. Main, most streets lack sidewalks. This means that people walking, bicycling and driving share the same space. If we want Ashland's transportation system to be safe for all ages and abilities (and all modes of travel), then lowering the speed limits will help achieve that outcome.

Ashland Households Can Save Money with Lower Speeds

Some members of our community either don't drive or don't own an automobile. Reducing speeds makes bicycling and walking more practical and safer. When people choose to walk or ride a bike rather than drive, they pocket the money that they would otherwise spend on gasoline and car maintenance. These savings add up. Reducing maximum speeds helps to make our community more equitable.

It is estimated, with slower maximum speeds, that about five percent of existing travel using automobiles would, in the future, be made by people walking or riding a bicycle. The actual shift in mode may be higher or lower than the forecast. But it is known, based upon surveys in other communities, that roughly half of Ashland residents are "interested in bicycling but are concerned" for their safety. They are afraid to share the roadway with motor vehicles traveling at current speeds. Below is a typical distribution of attitudes toward bicycling. Most people who currently bicycle are probably either "strong & fearless" or "enthused and confident."



More people will choose to walk or bicycle if the City's streets can be adjusted to make it safer for people to walk or bicycle.

Saving the Planet – Reduced Carbon Emissions

Did you know that every gallon of gasoline you consume produces 20 pounds of carbon dioxide? Incredible but true. Ashland could, with lower speeds, reduce its carbon dioxide emissions by 1,070 metric tons per year. These emissions reductions occur as a result of more people making the choice to bicycle or walk rather than drive, for some or all of their trips. That's right, we can reduce the impact on the planet by making it safer and more practical for people to choose to walk or bicycle. It's that simple.

These reductions are equivalent to:

- 836 or 12 percent of Ashland households, who heat water with natural gas, changing out their existing water heater to a heat pump water heater – at an approximate cost of $2,507,958 or,
- 710 or 10 percent of Ashland households, who heat with natural gas, to convert their natural gas furnace to a heat pump – at an approximate cost of $4,260,053

Conclusion

We recommend that the City Council:

i. Direct the Public Works Department to pursue reducing maximum speeds within the City to the maximum extent allowed by Oregon Revised Statute 810.180, and
ii. Request that the Southern Oregon legislative delegation ensure that Ashland is included among the jurisdictions which would be empowered, as Portland currently is, to set speed limits on roadways under the City's jurisdiction pursuant to a reintroduced HB 4103 (2020 legislative number).

To review the full report (45 pages) see:
https://drive.google.com/file/d/1kmwcUB4CzoAceW4UMZZFu2JzkBVTYPEJ/view?usp=sharing

EVIDENCE DEMONSTRATING THE EFFICIENCY, SAFETY & ECONOMIC BENEFITS OF LOWER MAXIMUM SPEED LIMITS IN ASHLAND, OREGON

Abstract

Lower maximum speeds will reduce deaths, injuries, and pollution and will lead to increased bicycling and walking with their associated health benefits. Ashland households, taken as a whole, that chose to shift from driving to walking or bicycling, will save more than $1 million per year.

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Bryan Sohl, Ashland Conservation and Climate Outreach Commission
Gary Shaff, Ashland Climate Policy Commission

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We recommend that the City Council:

i. Direct the Public Works Department to pursue reducing maximum speeds within the City to the maximum extent allowed by Oregon Revised Statute 810.180, and
ii. Request that the Southern Oregon legislative delegation ensure that Ashland is included among the jurisdictions which would be empowered, as Portland currently is, to set speed limits on roadways under the City's jurisdiction pursuant to a reintroduced HB 4103 (2020 legislative number).

Below, we outline empirical evidence showing a 5mph speed reduction promotes significant improvements not only in transportation system safety, but efficiency as well — including the counterintuitive result of reduced traffic congestion. We also show that such change would require minimal initial investment and generate substantial economic returns.

The contributors of this report are indebted to the original research and writing undertaken by Steve and Michelle Porter of Bend Economic Research. Their work is reproduced here with permission. The Ashland specific analysis has been added but the bulk of the report is credited to Steve and Michelle who we wish to publicly thank for their contribution to the safety, welfare, and health of all Oregonians and the planet earth.

This report denotes the original research by utilizing a vertical line adjacent to sections written by Steve and Michelle Porter (see first two paragraphs, above). Where the word "Ashland" has been substituted for the word "Bend" or numbers changed to reflect figures for Ashland instead of Bend but the balance of the section is otherwise consistent with the original text the vertical line is retained (as in the first paragraph).

SUMMARY

It is tempting to dismiss the difference between 25mph and 20mph speed limits as marginal and unimportant. However, volumes of data indicate the contrary, showing that dramatic social and economic gains follow from that 5mph reduction.

For one, **significant improvements in transportation system safety occur**. When 20mph speed limits are installed in urban and residential streets, citywide risks of serious injury and fatality among pedestrians and cyclists drop by 40% and 30%, respectively. These and similar effects elevate both actual and perceived safety levels for all transportation system users.

With those changes in safety levels, modal substitution rates increase. Data show that as speed limits approximate 20mph, a "tipping point" is reached where widespread adoption of non-vehicle transport occurs. This has a profound effect on vehicle miles traveled (VMT) in 20mph systems. A decrease in Ashland's speed limits from 25 to 20mph would be expected to reduce VMTs by about 5%, or almost 3 million miles annually.

It is estimated that $764,212 in annual savings would result from reduced traffic collisions in Ashland under a reduced maximum speed limit system. Other economic consequences include reduced fuel usage and pollution levels. Slower traffic speeds, lower VMTs, and increased rates of walking and cycling improve public health and generate economic gains. Reduced annual fuel consumption would be anticipated with saving to Ashland's households of $305,554 per year. Additionally, reduced climate inducing CO_2 emissions would fall by 1,070 metric tons.

It is clear that a reduced maximum speed limit system would quickly pay for itself since implementation costs are estimated at about $100,000.

All told, if Ashland were to make a commitment to slower maximum speed limits in a manner consistent with Oregon Revised Statute 810.180 and enforce those speed limits adequately, it would stand to generate annual economic savings of more than $1 million – for a one-time implementation cost of approximately $100,000.

The following report details empirical research and calculations supporting each point in the above summary. Naturally, all findings are subject to certain data limitations and may be revised in the event additional information becomes available. This report accordingly may be best viewed as preliminary; nevertheless, reasonable professional care has been taken to ensure accuracy and, where applicable, conservatism in estimation.

INTRODUCTION

Over the last few decades, hundreds of municipalities, encompassing tens of millions of residents in North America and Europe, have adopted 20mph speed limits. Cities including Washington, D.C., New York City, Seattle, and, as of April 2018, Portland, Oregon,[1] are among them, as are smaller towns, with populations similar to Ashland's.[2]

These cities form natural laboratories for assessing the policy. Substantial quantitative research has taken place across them to evaluate traffic mortality rates, pollution levels, and transportation system throughput, among many other variables. There is accordingly a wealth of " real-world" empirical evidence drawn from locales that have made 20mph their system-wide default speed limits.[3]

"Reductions in vehicle travel speeds can be achieved through lowered speed limits, police enforcement of speed limits, and associated public information. More long-lasting speed reductions in neighborhoods where vehicles and pedestrians commonly share the roadway can be achieved through engineering approaches generally known as *traffic calming*. Countermeasures include road humps, roundabouts, other horizontal traffic deflections (e.g., chicanes), and increased use of stop signs. Comprehensive community-based speed reduction programs, combining public information and education, enforcement, and roadway engineering are recommended."[4]

The evidence shows that all participants in a transportation system are benefited by reduced speed limits, and, of equal importance, no participants are made materially worse off. Such findings demonstrate a high level of efficiency associated with implementation of 20mph default speed limits: the transportation system is made unambiguously better in a 20mph regime since no one must incur losses in order to confer benefits on others.

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[1] New York City was the first U.S. city to adopt a 20mph program, which it did according to a zoning approach in which certain zones adhere to the 20mph standard while others do not. Under this approach, traffic deaths fell for three consecutive years, declining by approximately 23% in total. Portland's implementation of the 20mph program reduces speed limits on "non-arterial residential streets, which comprise about 70 percent of the city's street grid." New signs were posted citywide in April 2018.

Lazo, L., "As Traffic Deaths Soar, Cities Pursue Lower Speeds to Eliminate Fatalities," *The Washington Post* (February 25, 2017).

Nius, E., "Portland City Council Approves 20 mph Speed Limit on Residential Streets," *The Oregonian* (January 18, 2018).

Seattle Department of Transportation Website, "20 MPH Zones" (accessed May 2018).

[2] 20mph is the default speed limit in most European towns, as well as many towns in the UK, encompassing all population sizes.

[3] In the context of Ashland, the terms "system-wide" and "default" are meant to refer to the majority of roads in Ashland currently designated with 25mph speed limits, in a manner consistent with Oregon Revised Statute 810.180: "A road authority may establish by ordinance a designated speed for a highway under the jurisdiction of the road authority that is five miles per hour lower than the statutory speed," subject to certain considerations and limitations. Roughly 184.7 lane-miles in Ashland are estimated to be immediately eligible for 20mph limits.

[4] W.A. Leaf and D.F. Preusser, Literature Review on Vehicle Travel Speeds and Pedestrian Injuries Among Selected Racial/Ethnic Groups, October, 1999 https://one.nhtsa.gov/people/injury/research/pub/hs809012.html

Findings associated with 20mph speed limits will be thematically presented as follows: 1) Safety; 2) Traffic Congestion; 3) Fuel Consumption; 4) Carbon Emissions; 5) Road Capacity and Infrastructure Spending; and 6) Public Health. Where sufficient data are available, the economic implications of transition to 20mph speed limits will be evaluated within each of these areas. Finally, conclusions following from these analyses will be presented.[5]

DISCUSSION

1. Improved Safety for All Transportation System Participants

Improved safety outcomes extend from automobile drivers and their passengers to pedestrians, cyclists, and residents in 20mph systems, affecting essentially all those using the transportation system and living or working near it. These benefits derive from reduced traffic collisions, diminished severity of crashes, and decreases in non-traffic crime levels. Each element is addressed in turn, and a detailed evaluation of collision reduction is provided.

The most salient gauge of transportation system safety is found in the quantity of traffic collisions that occur. An ideal system would generate zero collisions and feature safeguards such that, if one were to transpire, it would be of the least serious type. A statistical relationship has been observed between traffic speed changes and corollary changes in the number of crashes. It shows that a decrease in average traffic speed from 25mph to 20mph (which represents a 20% reduction in speed) is associated with:

- a 45% decline in fatal collisions;
- a nearly 30% decrease in collisions resulting in serious injury; and
- a 20% reduction in collisions resulting in minor injury.[6]

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[5] In general, the analysis of social and economic effects relating to 20mph speed limits evaluated in this report can be thought of as reflecting an "average" level of implementation, including placement of 20mph signage along with some measures of public education, enforcement, and traffic calming. "Average" implementation reflects the typical level of signage and ancillary supportive policies adopted by localities moving to 20mph speed limits.

[6] It can be noted, as a logical matter, that actual traffic speeds need not necessarily change just because posted speed limits change. While this is true, it has been empirically observed that 1) a proportion of traffic does adhere to posted limits; 2) a portion of traffic that does not adhere to posted limits tends to "anchor" its speeding against the posted limit (e.g., these speeders will exceed whatever the limit is by X mph); and 3) when posted traffic speed limits change, the average traffic speed changes along with it, in the range of nearly 100% of the change (i.e., if the speed limit declines 5mph, then so will the average traffic speed decline 5mph) to 25% of the change. Due to non-linearity and feedback effects, even 25% of a 5mph decline in average speeds (i.e., a 1.25mph reduction) that brings traffic closer to 20mph can have profound safety and efficiency consequences. When enforcement or traffic calming is added alongside speed limit reductions, compliance is further enhanced.

Elvik, R., "The Power Model of the Relationship Between Speed and Road Safety: Update and New Analyses," Institute of Transport Economics, Norwegian Centre for Transport Research (2009).

"Vision Zero: How Safer Streets in New York City Can Save More Than 100 Lives a Year," Drum Major Institute for Public Policy and Transportation Alternatives (June 2011).

Standalone empirical observations (detailed below) that relate to cities adopting 20mph speed limits corroborate these findings. A 20mph default speed limit brings transportation systems closer to a collision-free ideal.

In addition to reduced collision counts, the severity of any collisions that do occur also declines, with a disproportionately large decrease in the worst types of automobile accidents that result in death or serious injury.[7] This favorable redistribution occurs because of the non-linear relationship between speed and crash severity.[8] As speeds approximate 20mph, mortality and injury risks dramatically decrease in collisions, an effect that will be detailed below. In summary, at lower speeds, drivers have more time to react to events precipitating possible collisions, improving odds of avoiding accidents, and the harm of any crash that does happen is reduced.[9]

This section will focus on statistics showing the level of safety improvement in 20mph systems as reflected by crash counts and severity. These numbers are among the most reliably tallied and studied quantitative elements of transportation systems and therefore provide a useful starting point for understanding the safety implications of 20mph speed limits.[10] They are not, however, comprehensive.

Notwithstanding the limitations of traffic collision and mortality statistics in reflecting safety gains associated with 20mph systems, representative statistics are outlined below showing traffic safety improvements that

[7] Sammer, G. and F. Wernsperger, "Results of the Scientific Investigation Accompanying the Pilot Trial of 30 kph Limit in Side Streets and 50 kph Limit in Priority Streets," The 23rd European Transport Forum: Proceeding of Seminar G: Traffic Management and Road Safety (September 1995).

[8] Grundy, C., et al., "Effect of 20mph Traffic Speed Zones on Road Injuries in London, 1986-2006: Controlled Interrupted Time Series Analysis," *British Medical Journal*, Vol. 339 (2009).

[9] Two empirical studies observe a "spillover effect" where reduced speed limits on targeted roads lead to reductions in speeding on roads with unaltered speed limits. This implies broader life-saving implications for 20mph speed limit systems than those reflected in analyses solely addressing collisions on 20mph streets and, indeed, evidence shows that, once 20mph speed limits are established on a critical mass of streets, fatalities on non-20mph streets fall by an average of 8%, up to 11.5%. (Archer, J., et al., "The Impact of Lowered Speed Limits in Urban and Metropolitan Areas," Monash University Accident Research Centre (2008). Grundy, C., et al., "Effect of 20mph Traffic Speed Zones on Road Injuries in London, 1986-2006: Controlled Interrupted Time Series Analysis," *British Medical Journal*, Vol. 339 (2009).)

[10] Statistics in this section derive from numerous studies that reflect findings from New York City and the UK, where the most empirical work has been done to evaluate 20mph speed limit safety. Importantly, these regions all reduced speed limits to 20mph from 30mph, rather than from 25mph as would be done in Ashland. This has the logical effect of causing reported statistics to likely overstate the level of collision and mortality reductions that would be observed in Ashland following 20mph implementation. These figures nevertheless provide important reference points relating to 20mph speed limit safety and, in all events, provide useful directional evidence showing the relationship between 20mph speed limits and road collisions, deaths and serious injuries.

have occurred upon adoption of 20mph speed limits. As applicable, discussions of specific factors underpinning these reductions and implications for Ashland are provided.[11]

Pedestrians

Pedestrian involvement in killed-or-seriously-injured collisions ("KSI collisions") has been shown to decrease by 39% to 50% in 20mph systems.

The fatality risks to pedestrians decline as speed limits fall toward the 20mph mark because of the non-linear relationship between pedestrian risk and vehicle speed in collisions. This speed-safety link is illustrated in Figure 1, originally published in the "Cities Safer by Design" manual of the World Resources Institute, based on OECD research. A clear inflection point can be found when vehicle speeds exceed 20mph, shown on the graphic at 30kph. (Since the graphic derives from research conducted in OECD countries, it uses the international standard kilometers per hour ("kph") instead of mph; a speed of 30kph is approximately equal to 20mph, a speed of 40kph is approximately equal to 25mph, and a speed of 50kph is approximately equal to 30mph.)

The implications of non-linearity in pedestrian mortality risk vis-a-vis automotive speed are striking. It has been found that a pedestrian in contact with a vehicle traveling 30mph is *eight times more likely to die* than in a collision with a vehicle traveling 20mph.[12] Across speeds ranging from 25mph to 20mph, it is shown that each 1mph difference in vehicle speed reduces fatality risk by about 6%, such that a pedestrian's fatality risk *doubles*

[11] The following studies are cited in this section:

Webster, D. and A. Mackie, "Review of 20mph Zones in London Boroughs," Transport Research Laboratory (2003).

Sammer, G. and F. Wernsperger, "Results of the Scientific Investigation Accompanying the Pilot Trial of 30 kph Limit in Side Streets and 50 kph Limit in Priority Streets," The 23rd European Transport Forum: Proceeding of Seminar G: Traffic Management and Road Safety (September 1995).

Department for Transport, "Interim Evaluation of the Implementation of 20mph Speed Limits in Portsmouth" (2010).

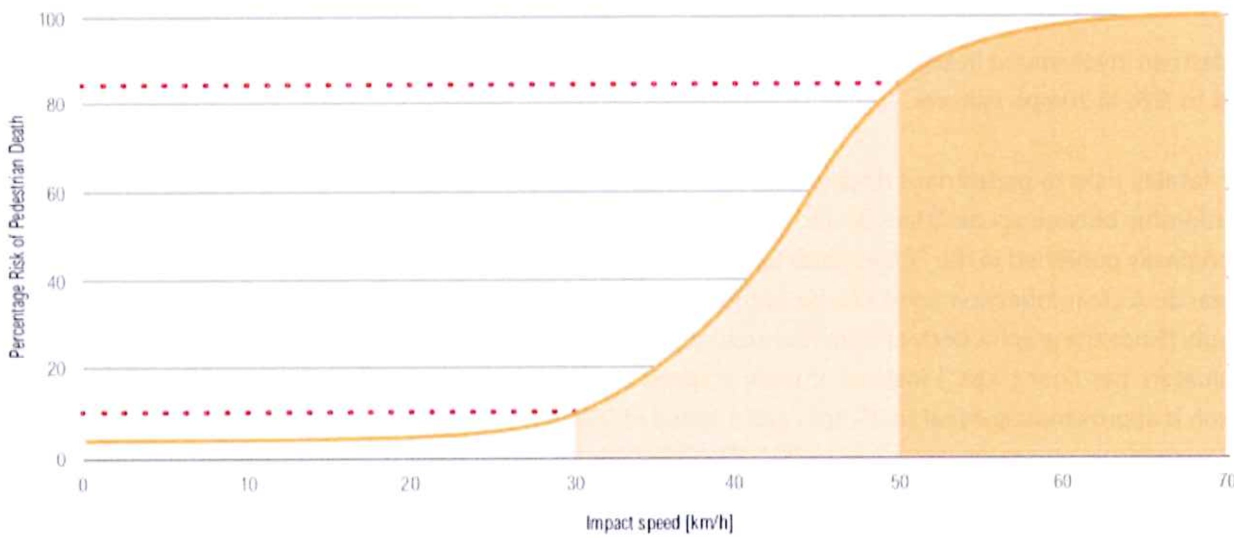
"Road Safety Factsheet: 20mph Zones and Speed Limits Factsheet," Royal Society for the Prevention of Accidents (November 2017).

Department for Transport Traffic Advisory Leaflet 9/99 (June 1999), "20 mph Speed Limits and Zones."

New York City Department of Transportation Website: "Motorists & Parking, Neighborhood Slow Zones" (accessed June 2018).

[12] "Vehicle Speed and Pedestrian Age Determine Crash Outcomes," ***Status Report*** (Insurance Institute for Highway Safety/Highway Loss Data Institute), Vol. 35, No. 5 (May 2000).

Figure 1



Note: The above figure shows the relationship between pedestrian fatalities and vehicle impact speed published by the OECD (2006). Some recent studies show a similar relationship, but account for sample bias to find slightly lower risks in the 40 to 50 km/hr range. (Rosen & Sander 2009, Tefft 2011, Richards 2010, Hannawald and Kauer 2004) There are not, however, studies from low- and middle-income countries where things like vehicle type, emergency response time and other characteristics may influence this relationship. In any case, there is clear evidence to support policies and practices that lower vehicle speeds to 30 km/hr where pedestrians are commonly present, and no more than 50 km/hr on non-grade separated streets.

with an impact speed increase from 20mph to 25mph. Seemingly marginal reductions in traffic speeds within the crucial speed range of 20mph to 25mph have robust impacts on pedestrian mortality.[13]

Beyond fatalities, severe injuries among pedestrians also are substantially mitigated with 20mph speed limits. And, as with fatality risk, a non-linear relationship between injury risk and automotive speed is observed, with a critical inflection point in the slope occurring around 20mph. Figure 2 shows two representations of empirical data, both of which illustrate pedestrians' risk of severe injury plotted against vehicle speed. The top graphic highlights the significance of vehicle type, showing that light trucks (including pickups and SUVs) are more inimical to pedestrians than passenger cars since trucks tend to knock down and then run over victims, while cars tend to roll victims over the windshield, the former being much more damaging to a human body. The second graphic highlights the significance of pedestrian age, showing that the elderly are particularly endangered in collisions.[14]

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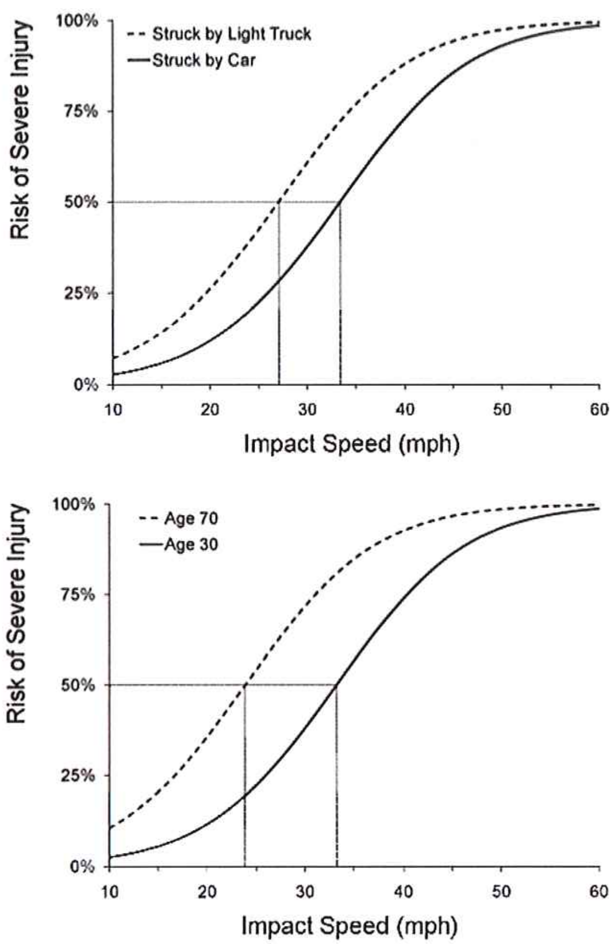
[13] Barrios, L., "Killing Speed," Injury Prevention, Vol. 6 (2000).

Tefft, B., "Impact of Speed and a Pedestrian's Risk of Severe Injury or Death," *AAA Foundation for Traffic Safety* (September 2011).

[14] Tefft, B., "Impact of Speed and a Pedestrian's Risk of Severe Injury or Death," *AAA Foundation for Traffic Safety* (September 2011).

Figure 2



These findings are emphasized here because both have critical importance for Ashland. In the first instance, Ashland traffic is heavily populated by light trucks and SUVs, consistent with broader trends in the U.S. [15] In the second instance, Ashland's elderly population is large and growing, owing to Ashland's prominence as a retirement destination. Ashland's senior citizen population increased 29.5% from 2010 to 2019, [16] now comprising 22% of the populace. The over-65 population in Jackson County is forecast to grow to almost 30% of the population by 2035 and 37% by 2065 compared to 20.1% in 2015. [17] This places special duty on Ashland's transportation system to meet the safety needs of this cohort of users. For these reasons, emphasis should be placed on these vehicle-type and age-related findings, and additional consideration should be given to the severity of light truck collisions involving the elderly, mortality and injury statistics for which are not available.

The foregoing logic and empirical results are distilled into summarized findings of a review conducted by the U.S. Department of Transportation into the nexus between traffic speed and pedestrian risk, regardless of vehicle type or pedestrian age. As illustrated in Figure 3, a critical threshold of traffic speed is found at 20mph, a speed above which is found a surge in pedestrian fatality and injury.[18]

Figure 3

[15] Carey, N., "Trucks, SUVs Shine in Mixed January Sales, Cars Less So," *Reuters* (February 1, 2018).

[16] U.S. Census Quick-Facts (accessed 12/7/2020)

https://en.wikipedia.org/wiki/Ashland,_Oregon#Demographics

[17] https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1005&context=opfp (accessed 11/25/2020)
[18] "Literature Review on Vehicle Travel Speeds and Pedestrian Injuries," U.S. Department of Transportation, National Highway Traffic Safety Administration (October 1999).

Vehicle travel speed and pedestrian injury severity.
(Florida, 1993-1996; pedestrians in single-vehicle crashes)

Injury Severity	Travel Speed (Officer Estimates)						Total
	1-20 mph	21-25 mph	26-30 mph	31-35 mph	36-45 mph	46+ mph	
Fatal (K) injury	1.1%	3.7%	6.1%	12.5%	22.4%	36.1%	6.5%
Incapacitating (A)	19.4%	32.0%	35.9%	39.3%	40.2%	33.7%	27.0%
Nonincapacitating (B)	43.8%	41.2%	36.8%	31.6%	24.7%	20.5%	38.8%
Possible inj (C) or none	35.6%	23.0%	21.2%	16.6%	12.7%	9.7%	27.7%
Total frequency	13,368	1,925	2,873	2,188	2,493	906	23,753

An acute relationship between pedestrian well-being and traffic speed is well established. At speeds above 20mph, collision incidence rates are higher and those collisions result in worse and more likely fatal injuries. Research conducted in connection with pedestrian risk of mortality and severe injury therefore emphasizes the importance of keeping pedestrian activity removed from high-speed traffic (i.e., traffic traveling much above 20mph), and the most straightforward way of separating pedestrians from high-speed traffic is by reducing traffic speeds to acceptably safe levels (i.e., approximately 20mph) on residential and urban roads.[19]

Children

Children are especially susceptible to roadway injury and death, in part because of their smaller stature and in part because of their undeveloped physiology. It has been demonstrated that children do not perceive approaching vehicles or process that information in the same manner as adults, so they tend to misjudge traffic and be struck by automobiles. Crucially, it has been found that children cannot reliably detect an automobile approaching at speeds over 25mph, with better perceptivity at lower speeds.[20]

This fact, on its own, argues strongly in favor of system-wide 20mph speed limits, particularly in Ashland, where more than 3% of the population is under 5 years old, and 16.1% is under 18 years old.[21]

Consistent with these observations, empirical studies have found that 20mph speed limits are associated with dramatic reductions in child KSI collisions, with observed declines in the range of 45% to 67%.

Bicy*clists*

The rate of bicyclist involvement in KSI collisions decreases 29% to 50% with 20mph speed limits.

[19] Tefft, B., "Impact of Speed and a Pedestrian's Risk of Severe Injury or Death," *AAA Foundation for Traffic Safety* (September 2011).

[20] Wann, J., et al., "Reduced Sensitivity to Visual Looming Inflates the Risk Posed by Speeding Vehicles When Children Try to Cross the Road," *Physiological Science*, Vol. 22, No. 4 (2011).

[21] United States Census Bureau, "Ashland, Oregon QuickFacts" (accessed June 2018).

Drivers

Depending on the particulars of 20mph speed limit implementation, reductions in vehicular crashes of any type range from 15% to 50%. Additionally, collisions in which drivers are killed or seriously injured decrease in the range of 31% to 57%. Elderly driver injuries decline by approximately 50%.

Passengers

Passengers in automobiles are similarly benefited. A reduction in passenger deaths of 31% has been found in 20mph systems, and elderly passenger injuries have been shown to decline by 40%.

Motorcyclists

Motorcyclists experience 68% to 79% declines in casualties.

Economic Implications of Reduced Collisions

It is manifest that a human life defies economic valuation. Human health and well-being are similarly incalculable in worth. From a moral perspective, it may be stated that the loss of a single human life or the erosion of one person's well-being due to traffic accident outweighs any financial consideration; if a life can be saved through improved traffic management and planning, it should be done without resorting to amoral and base cost-benefit analysis of the type that assumes a human's death can somehow be compensated by fast enough traffic flows.

Notwithstanding these views, in the interest of completeness, it is appropriate to mention research that has estimated the economic costs associated with traffic collisions. Fatal crashes result in approximately $1.4 million in economic costs each, and crashes involving serious injury cost roughly $1.0 million per injured survivor. Medical costs and lost productivity comprise the majority of these financial losses, with additional contributions to cost coming from property damage and traffic congestion. Collisions in which only property damage occurs (i.e., those with no fatalities or injuries) carry an average cost of roughly $3,900 each.[22]

Applied to Ashland's traffic collision statistics, these economic values can be used to estimate costs that would be saved through implementation of 20mph speed limits. Over this approximate five-year span, the fatal collisions carried an imposed cost of $3.3 million; major injury collisions cost approximately $1 million. Conservatively, assuming zero medical or lost productivity costs for Level C injury collisions and property-damage collisions, costs of remaining traffic collisions equaled about $10 million.[23] Total calculated costs are therefore approximately $14.4 million, or about $2.9 million per year.

[22] Blincoe, L., et al., "The Economic and Societal Impact of Motor Vehicle Crashes," U.S. Department of Transportation, National Highway Traffic Safety Administration, DOT HS 812013 (May 2015 (Revised)).

[23] Level B and Level C injuries may well implicate medical attention and productivity losses. Level B injuries are "visible injuries" that include those "evident to observers at the scene of the crash" such as "a visible lump, abrasions, cuts, bruises, minor lacerations, etc."

Were Ashland to achieve average collision reductions via implementation of 20mph speed limits, it would be expected to experience total economic savings of approximately $0.76 million annually.[24] The particulars of those savings are as follows.

First, Ashland would experience a reduction in fatal injuries of roughly 45% (from two every five years to one during a five-year period). This would save approximately one life every five years and reduce economic losses by about $1.5 million during a five-year period ($298,620 annually).

Second, collisions generating Level A injuries would be expected to decrease by about 30% (from 11 to 7.7 over five years), resulting in saved costs of $317,460 ($63,492 annually).

Third, remaining collisions would be anticipated to decline in incidence by about 20% (i.e, from (95+255+355) = 705 to 564), reducing economic losses by slightly more than $2 million ($402,000 annually).[25] These calculations are summarized in Table 1.[26]

The City of Ashland's geographic information system (GIS) accident data shows 1,064 compared to the ODOT statistics, as used in Table 1, of 718. Importantly, the City's GIS data shows that 14% of all accidents involved a pedestrian or a person riding a bicycle.

Level C injuries "include momentary unconsciousness, complaint of pain, limping, nausea, etc." U.S. Department of Transportation, Federal Highway Administration, "KABCO Injury Classification Scale and Definitions" https://safety.fhwa.dot.gov/hsip/spm/conversion_tbl/pdfs/kabco_ctable_by_state.pdf (accessed November 25, 2020).

[24] Importantly, this analysis assumes that "but-for" collisions (i.e., collisions that will occur in the future if not for speed limit interventions) will not increase over time; any increase in but-for collision incidence would cause life and financial savings associated with 20mph speed limits to increase proportionately.

[25] Many of these collisions are subject to self-reporting and do not generate police involvement. It is likely the actual counts of such collisions exceed reported numbers, and it may be further speculated that a share of these unreported crashes is attributable to speed-related factors.

[26] Due to safety spillover effects from 20mph to non-20mph roads, safety-related network effects associated with modal substitution, and reduced VMTs, reductions in fatalities, injuries, and non-injury collisions would not occur solely on 20mph speed limit streets. On the basis of statistical evidence, it would be expected that essentially all KSI collisions on urban local roads would be eliminated, with smaller percentage reductions along collector and minor arterial streets.

Table 1.
Ashland Estimated Collision Savings with 20 MPH Speed Limits

	Baseline 1 (A) [27]	20 MPH Estimate (2) (B)	Reduction (C) (A - B)	$ Loss per Collision (D)	Estimated Annual Savings (C) X (D) / 5
Fatal Injury Collisions	2	1.1	0.9	$1,659,000	$298,620
Class A Injury Collisions	11	7.7	3.5	$96,000	$63,492
Class B Injury Collisions	95	74.1	20.9	$27,800	$105,640
Minor Injury Collisions	255	204.0	51.0	$22,800	$232,560
Property Damage	355	284.0	71.0	$4,500	$63,900
TOTAL	718	570.9			$764,212

Notes:

(1) Baseline values reflect 5-year totals 2015 through 2019

(2) Column (B) calculated as (Column (A) x (1 – 0.45)) for Fatal Injury Collisions; (Column (A) X (1 – 0.3) for level A injury Collisions; and (Column (A) X (1 – 0.2) for all other injury types

2. Reduced Traffic Congestion

When system-wide speed limits are reduced to 20mph, the speed reductions are associated with decreases in traffic congestion, rather than increases. This effect stems from two parallel mechanisms. The first relates to increased uptake of walking or cycling, which results in the removal of cars from roads. The second relates to the improved utilization of roadway resources when drivers operate at lower speeds. These two processes play a role in explaining how vehicle travel times in Ashland would be negligibly - if at all - changed with 20mph speed limits.

Increased Walking and Cycling Decrease Traffic Congestion

When additional people walk or cycle for transport, those people undertake a simple substitution – walk or cycle rather than drive – and thereby reduce vehicle miles traveled in the transportation system. Owing to this

[27] ODOT Crash Data Statistics, https://zigzag.odot.state.or.us/uniquesig08615cf883bed667d26bcec3a7dc5c6b/uniquesig0/SecurezigzagPortalHomePage/ for "all roads in Ashland" (accessed 12/07/2020),

substitution effect, the removal of cars and VMT from the transportation system is directly reflected by increases in walking and biking, growth in which has been observed at rates up to 36% following implementation of 20mph speed limits.[28]

Such large increases in non-automotive modalities, and attendant decreases in vehicular roadway demand, accumulate over time through a positive feedback loop. First, reduced automotive traffic speed limits induce more people to walk or cycle because lower speed limits improve the real and perceived levels of safety for non-automotive transportation. Since the propensity of residents to walk or cycle, rather than drive, is based upon factors of "safety, perceptions of safety, the condition of the surfaces and the overall appearance of the...environment,"[29] as actual and perceived safety increase – in lockstep with reductions in speed limits – more people forgo car travel, thus freeing up roadway resources and reducing congestion.[30]

Second, as additional commuters take to sidewalks and bike lanes, safety levels for pedestrians and cyclists rise further. This is because, as pedestrian and cycling activity increase, drivers become more attuned to their presence, and danger levels fall. Empirical studies show the "likelihood that a given person walking or bicycling will be struck by a motorist varies inversely with the amount of walking or bicycling," as shown in Figure 4.[31]

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[28] Bristol City Council, "Monitoring Report: 20mph Speed Limit Pilot Areas" (2012).

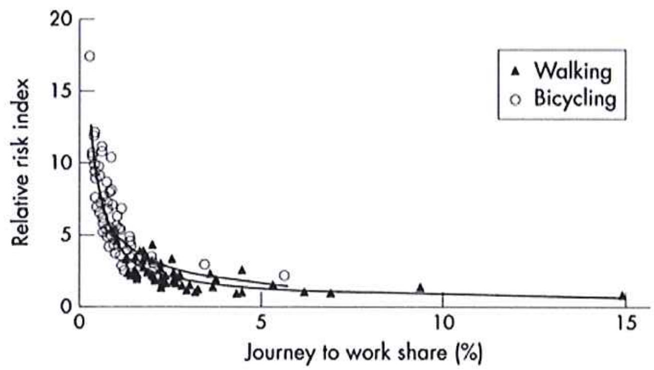
This increase in walking and cycling occurred in connection with implementation of 20mph speed limits and development of additional walking and cycling infrastructure like construction of additional sidewalks. Hence, it has not been determined to what extent the modal substitution can be attributed to speed limit changes. It will be discussed shortly, however, that such increase is consistent with the economics of network effects and empirical observations regarding pedestrian and cyclist safety.

[29] Tovar, M. and Kilbane-Dawe, "Effects of 20mph Zones on Cycling and Walking Behaviours in London," Par Hill Research Ltd. (2013).

[30] From an economic perspective, in addition to a shift in relative safety levels, a 20mph regime also induces walking and cycling uptake because it alters the opportunity costs associated with driving relative to walking or cycling. This is because a lower speed limit network reduces the average speed differential between driving and non-driving modes.

[31] Jacobsen, P., "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," ***Injury Prevention***, Vol. 9 (2003).

Figure 4



That is, as more people walk and cycle, the safer it becomes for everyone to walk and cycle, exhibiting a phenomenon known as "network effects" (i.e., the value of walking or cycling increases for all pedestrians and cyclists as each incremental person substitutes from driving to a non-driving mode). [32] This follow-on improvement in real and perceived safety for pedestrians and cyclists induces yet more uptake, which engenders additional network effect benefits, causing traffic levels and congestion to fall further.[33] Crucially, walking and cycling complement each other, with higher rates of either walking or cycling leading to reduced risk for both pedestrians and cyclists.[34]

As summarized by researchers in the U.K.:

> A 20 mph speed limit, properly enforced, would go a long way to removing the present deterrents to cycling. There would be gains both to the cyclists who now brave the present unsatisfactory conditions and to would-be cyclists, now frustrated, who would feel enabled to join them...[and] other road users would gain from reduced congestion.[35]

Consistent with these modal substitution mechanisms, empirical evidence shows reductions in vehicle transport are substantial upon 20mph adoption. Following reduction of road speed limits to 20mph, system

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[32] Liebowtiz, S.J. and S. Margolis, "Network Externalities (Effects),"

[33] "Vision Zero: How Safer Streets in New York City Can Save More Than 100 Lives a Year," Drum Major Institute for Public Policy and Transportation Alternatives (June 2011).

[34] "The statistics show that bike riders actually protect pedestrians by altering the behavior of drivers." Sadik-Khan, J. ***Streetfight***, Viking (2016).

[35] Plowden, S. and M. Hillman, ***Speed Control and Transport Policy***, Policy Studies Institute (1996), Ch. 10.

traffic volumes were observed in one empirical study to decrease, on net, by an average of 15% across 250 measured locales.[36]

A separate analysis of traffic volume responses to the implementation of 20mph speed limits found that net system traffic volumes decreased in the range of 5.3% to 13.4%, depending upon particulars of the implementation such as the extent of 20mph speed limit deployment (i.e., system-wide, resulting in greater traffic decreases, versus zoned), enforcement levels, and other contemporaneous traffic calming measures.[37] Importantly, for reasons including network effects associated with non-driving modes and other time-dependent feedback mechanisms, these traffic reduction levels may be best viewed as short-run consequences, with larger reductions likely over longer intervals when follow-on effects have fully matured.[38]

Quantification of Expected VMT Reductions in Ashland with 20mph Speed Limits

These findings provide useful reference for understanding the directional relationship between speed limits and VMTs as well as the general magnitude of VMT responsiveness to implementation of 20mph speed limits. They can accordingly be used to estimate the effects a 20mph speed limits would have on traffic volume in Ashland. Care must be taken, however, in applying the empirical findings' results to Ashland because, in the 20mph speed limit areas subjected to empirical study of traffic volume change, all underwent speed limit reductions from 30mph to 20mph (i.e., a 10mph reduction) and therefore twice the reduction applicable to the instant analysis. Translating the findings to Ashland's circumstances requires consideration of several observations, each of which is discussed below.

First, it is significant that the speed limit reduction from 30mph to 20mph encompasses the speed limit reduction applicable to Ashland (i.e., 25mph to 20mph). The experience of these converted 30mph zones is relevant and enables an initial estimate to be made of VMT responsiveness in Ashland as follows. The

[36] This net reduction figure accounts for route displacement effects. The majority of traffic was found not to circumvent the lower speed limit zones; rather, the traffic simply disappeared, a concept that is sometimes referred to as "reduced demand." The levels of traffic volume reduction are highly variable region to region and appear to depend principally upon the level of commitment made to a 20mph regime: generally, the greater the adoption rate (i.e., closer to system-wide rather than on a zone-by-zone basis, more enforcement and greater implementation of other traffic calming measures, the greater the reduction in traffic volumes). This finding is entirely consistent with the economics of induced demand and the law of demand. (See: Department for Transport Traffic Advisory Leaflet 9/99 (June 1999), "20 mph Speed Limits and Zones.")

[37] Steer Davies Gleave, "Research into the Impacts of 20mph Speed Limits and Zones, (November 2014).

[38] Research relating to VMT responses to road infrastructure changes show that full demand responses tend to mature after approximately three years, while most traffic reduction research evaluates shorter-term responses, often of just one year.

Noland, Robert B. and Lewison L. Lem, "A Review of the Evidence for Induced Travel and Changes in Transportation and Environmental Policy in the US and the UK," *Transportation Research Part D*, 7 (2002).

Litman, Todd, "Generated Traffic and Induced Travel: Implications for Transport Planning," Victoria Transportation Policy Institute (April 17, 2017).

approximate midpoint of observed traffic volume reductions is 10% (i.e. 5.3% to 15%), implying an average 1% traffic volume reduction per 1mph of speed limit reduction within the 30mph to 20mph range. This suggests that a 5mph speed limit reduction would be met with approximately 5% of VMT decline; such level of response might well be expected in Ashland.

Second, it is pertinent to ask whether the relationship between speed reduction and VMT response within the 30mph to 20mph range is linear (i.e., 1% VMT reduction per 1mph speed reduction across the whole range) or whether there are reasons why VMT responsiveness might increase or decrease across the range in non-linear fashion. The mechanism underpinning VMT reduction is modal substitution, and modal substitution rates are modulated by actual safety and perceived safety. Therefore, it is appropriate to evaluate how safety levels vary across the speed ranges of 1) 30mph to 20mph; 2) 30mph to 25mph; and 3) 25mph to 20mph to ascertain whether there is evidence of any safety tipping point within these speed ranges that would serve to generate large modal substitution increases at a certain speed but not above it. If so, that would provide evidence that, above a certain speed limit range, modal substitution rates would be low and, below a certain speed limit range, substitution would higher - i.e., it would indicate a non-linear relationship between speed reduction and VMT response. On this basis, the evidence would show whether a 1% VMT reduction per 1mph of speed limit decrease across the 25mph to 20mph range is likely accurate or too high or too low.

In this connection, several statistical observations are helpful in illustrating relative risk levels across the three speed limit intervals:

1) half of pedestrian deaths and 80% of pedestrian serious injuries occur at traffic speeds of 30mph or lower, indicating that speeds up to 30mph retain significant risk levels;
2) only rare instances of fatality or serious injury are observed at speeds 20mph or lower, with just five percent of pedestrian collisions at 20mph resulting in death, indicating that speeds at or below 20mph provide low risk levels and that it is within the range of 30mph to 20mph where a crucial speed/safety step-change occurs; and
3) as speeds decline from 25mph to 20mph, risk of pedestrian death in a collision falls by 50% and, as speeds approximate 20mph, pedestrian and cyclist mortality risks stabilize at a low level (i.e., large safety gains occur as speeds fall from 25mph to 20mph and additional large gains are not realized below 20mph), demonstrating significant risks remain in play at speeds 25mph and higher and those risks dramatically fall as 20mph speeds are approximated.[39]

[39] Dorling, D., "20mph Speed Limits for Cars in Residential Areas, by Shops and Schools," Nine Local Actions to Reduce Health Inequalities, University of Oxford.

"Vehicle Speed and Pedestrian Age Determine Crash Outcomes," ***Status Report*** (Insurance Institute for Highway Safety/Highway Loss Data Institute), Vol. 35, No. 5 (May 2000).

Barrios, L., "Killing Speed," Injury Prevention, Vol. 6 (2000).

Accordingly, while it is true that every 1mph speed reduction in the 30mph to 20mph speed range is important for health and safety reasons, there is evidence of a tipping point in safety implications at speeds approximating 20mph. It is not until traffic speeds decline to 20mph that safety levels for pedestrians and cyclists stabilize at low levels. It is at this speed limit where perceived and actual safety become sufficient to provoke widespread modal substitution for transportation. In sum, the statistics imply a clustering of perceived and actual safety below 25mph and around the 20mph mark, which, given the importance of actual and perceived safety in motivating modal substitution, indicates responsiveness of VMT reduction to speed limit reduction would be greatest within the 25mph to 20mph speed range.[40] Speed declines from 30mph to 25mph would elicit smaller modal substitution effects since high risk levels remain in this range. This implies that a non-linear VMT reduction relationship with speed decrease exists and that above-average VMT responsiveness occurs within the 25mph to 20mph speed range. A 5% VMT reduction expectation in Ashland is conservative.

Third, it is shown that network effects apply to pedestrian and cyclist safety in transportation systems. Network effects generate pedestrian and cyclist safety value in increasing total quantities as more people switch from vehicles to non-vehicle modalities.[41] The lowest risk levels for pedestrians and cyclists occur when large numbers of people walk or cycle rather than drive. This relationship implies a non-linear link between vehicle speed limits and the quantum of network effect benefits since speed limit reductions generate modal substitution. Modal substitution in turn triggers network effect benefits that further reduce pedestrian and cyclist risk to engender more modal substitution.[42] Network effect benefits thus lag and compound other factors provoking modal substitution, so a concentration of VMT reduction as speed limits approach 20mph is consistent with the economics of network effects.[43] Modal substitution owing to network effects would exhibit non-linear growth as speed limits decrease, and VMT declines would accordingly accelerate as speed limits approach 20mph. Again, on this basis, a 5% VMT reduction expectation in Ashland is conservative.

Consistent with these considerations, it can be stated that, while a 5% VMT reduction in Ashland following adoption of 20mph speeds is a meaningful reference expectation, it may well be understated due to existence of modal substitution tipping point and accelerated network effects occurring around, but not much above,

Tefft, B., "Impact of Speed and a Pedestrian's Risk of Severe Injury or Death," ***AAA Foundation for Traffic Safety*** (September 2011).

Speck, J., ***Walkable City***, North Point Press (2012).

[40] Tovar, M. and Kilbane-Dawe, "Effects of 20mph Zones on Cycling and Walking Behaviours in London," Par Hill Research Ltd. (2013).

[41] Jacobsen, P., "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," ***Injury Prevention***, Vol. 9 (2003).

[42] " Vision Zero: How Safer Streets in New York City Can Save More Than 100 Lives a Year," Drum Major Institute for Public Policy and Transportation Alternatives (June 2011).

[43] Sadik-Khan, J. ***Streetfight***, Viking (2016).

20mph speed limits. Ashland could experience VMT decreases in excess of 5% upon adoption and enforcement of 20mph speeds, and thus encounter corresponding reductions in congestion.[44]

Data from Portland, Oregon provides an important insight into the community's response to slower maximum speeds. Bicycle volume increased by approximately 6.4 percent between 2010 and 2011 on Portland streets where speeds were reduced from 25 to 20 MPH. Within the same timeframe, 61 percent more bicycles were counted at 11 locations on newly developed neighborhood greenways.[45]

Portland has demonstrated the efficacy of "all ages and abilities" networks. Their success is shown in Figure 5. Increased density of bicycle boulevards (shown in green) between 2000 and 2010 coincides with a more than 5 percent increase in bicycle mode share. Clearly, separated in roadway bicycle facilities also played a significant role in the growth of bicycle use. Consideration of those types of improvements in Ashland will occur as a part of the City's update of the Transportation System Plan (schedule to begin in 2021).

Improved Utilization of Roadway Resources Improves Traffic Flow

The second factor that causes reduced traffic congestion in a 20mph speed limit network relates to roadway utilization efficiency. Automobiles can make better use of road supply at lower speed limits in urban and residential areas due to reduced spacing, improved filtering, and decreased collisions.

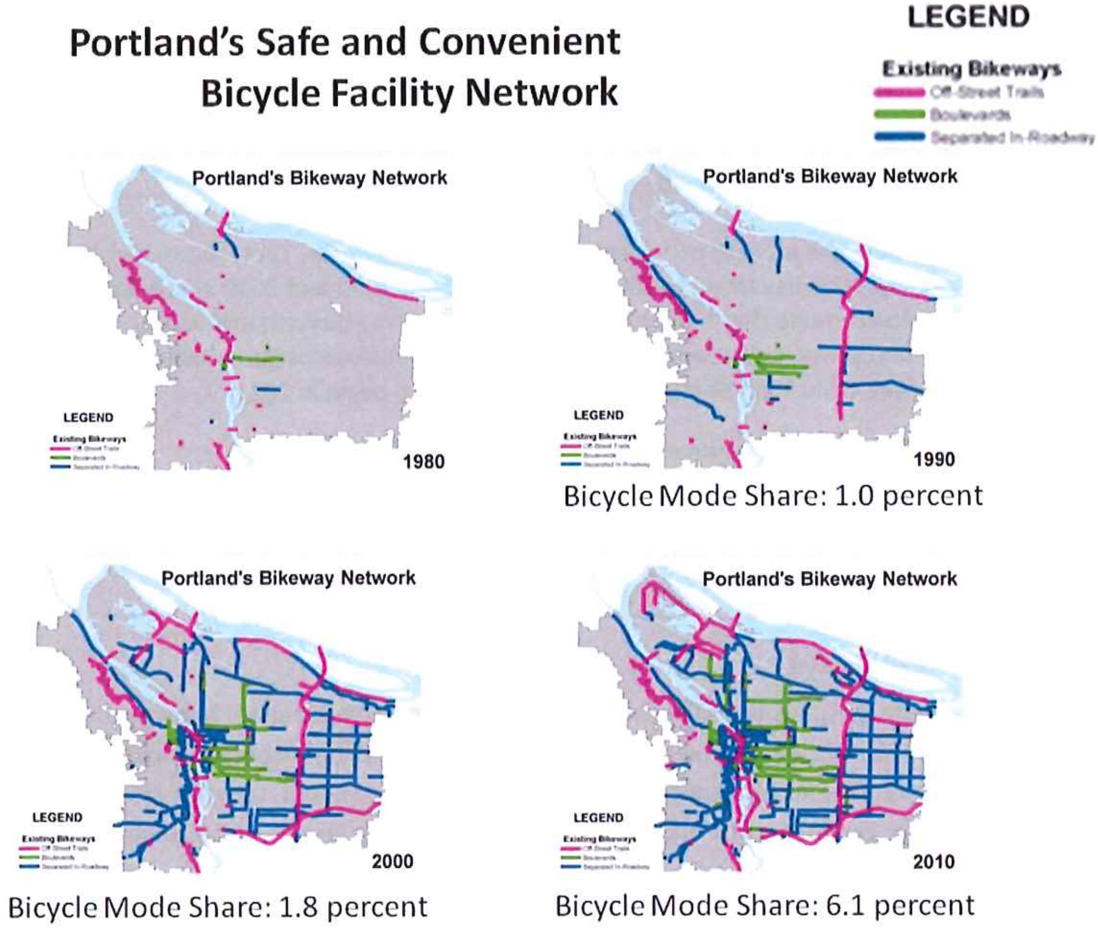
Reduced Spacing

As speed limits decline, cars traveling in the same lane require less "shy-distance" between them. Also known as "reduced spacing," densification of cars safely occurs when braking distances needed by automobiles contract. Because cars require less distance to come to a stop at lower speeds, they can leave less empty space between them (i.e., they can follow one another more closely) without increased risk of collision.

[44] A 5% VMT reduction value may further be considered conservative when applied to prospective 20mph implementation in Ashland because the availability and affordability of e-bikes continue to grow as the technology diffuses along a typical path of adoption. For trip durations of up to several miles, particularly in urban and suburban settings, e-bikes are particularly good substitutes for automobiles, but their safety profile generally equates to that of traditional bicycles and so increased adoption would be influenced by safety factors modulating modal substitution from vehicles to cycles. Most empirical evidence relating to substitution effects and VMT responses to 20mph limits pre-dates the current level of e-bike availability. This new technology factor implies greater modal substitution and VMT reductions in present and future 20mph applications.

[45] Neighborhood Greenways, Portland Bureau of Transportation, Neighborhood Greenways 101, https://www.portlandoregon.gov/transportation/article/554110
Portland Bicycle Counts Report, 2011, Portland Bureau of Transportation, February 2012; https://www.portlandoregon.gov/transportation/article/386265
Neighborhood Greenways Assessment Report, Portland Bureau of Transportation, 2015; https://www.portlandoregon.gov/transportation/article/735768

Figure 5



Portland's goal is to have 25 percent of commute trips made by bicycle in 2035.[46]

Automotive braking distance requirements (and thus safe shy-distance intervals) follow an exponential expansion with respect to speed, so even a small reduction in traffic speeds can generate large roadway space savings.[47] As illustration, the distance required for a vehicle to stop when traveling 20mph is roughly 14 meters.

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[46] Portland Transportation System Plan, Policy 9.49.f, page 27;
https://www.portland.gov/sites/default/files/2020-05/chapter2.tsp_.03.06.2020.pdf

[47] Litman, T., "Whose Roads? Evaluating Bicyclists 'and Pedestrians 'Right to Use Public Roadways," Victoria Transport Policy Institute (December 2013).

At 25mph, the requirement is 26 meters, nearly double the lower speed's stopping distance, despite the seemingly marginal 5mph speed difference.[48]

Reduced spacing leads to transportation system efficiency gains since it enables a safe increase of traffic density on the road (i.e., there is less "dead space" between each car in the system) during peak traffic times. This allows the system to accommodate more cars simultaneously. Significantly, this does not increase congestion; rather, cars are able to move at least as smoothly as at higher speeds, but simply with less empty space separating them. By eliminating unused lane miles, existing roadway resources are used more efficiently. On the basis of observing that braking distance and shy-distance intervals fall by nearly 50% in the 25mph to 20mph range, it can be generally stated that a speed limit reduction to 20mph significantly increases effective road capacity.[49]

Improved Filtering

Filtering is the process by which cars exiting one road merge into the traffic flow on another. When long traffic queues form, that is symptomatic of poor filtering efficiency. Such inefficiency often can be linked to a large speed differential between the stopped/merging traffic and the higher-speed oncoming traffic. As the speed of oncoming traffic increases, the difficulty of merging grows because the required "buffer" distance for safe maneuvering becomes greater; merging traffic requires more room to achieve the target speed.[50]

When speed limits are lower, the required buffer distance for safely merging into moving traffic falls. Long traffic queues are less likely to form and, if they do, are more quickly dissipated. This improves system-wide traffic flow and throughput, and reduces congestion, as road resources are more efficiently utilized. By way of demonstration, a reduction in traffic congestion of 10% was observed at systemically important (and typically congested) traffic interchanges in Sao Paulo, Brazil, in the first month following implementation of reduced speed limits.[51]

These insights are particularly pertinent along North Main.

[48] "Cities Safer by Design," World Resources Institute, graphic entitled "Higher Vehicle Speeds Require Longer Stopping Times" (2015). Stopping distance totals reflect reaction distance and braking distance.

[49] Duany, A., et al., ***Suburban Nation***, North Point Press (2000).

[50] Archer, J., et al., "The Impact of Lowered Speed Limits in Urban and Metropolitan Areas," Monash University Accident Research Centre (2008).

[51] "Numeros de Acidentes Cai 30% Apo Novos Limites na Marginais," ***O Estadoa de Sao Paulo*** (August 29, 2015).

Decreased Collisions

Significant reductions in traffic collisions are associated with 20mph speed limits. As collisions and attendant roadway obstructions are reduced, traffic congestion falls and travel time reliability improves since fewer crashes cause less traffic backup.[52]

Collisions that stop traffic have sweeping consequences for transportation system efficiency, with effects reverberating through the system.[53] Consider, for instance, the unused roadway just ahead of an accident that stops traffic and the blockages that occur on nearby roads as a traffic stall ripples outward. These are inefficiencies in transportation systems wrought by avoidable collisions. By reducing crashes, 20mph speed limits inoculate against an important cause of congestion.

Collectively, reduced spacing, improved filtering, and decreased collisions enhance road resource utilization and traffic flow, increase vehicle throughput, reduce traffic congestion, and benefit drive-time reliability.

Decreased Speed Limits Do Not Materially Affect Travel Times

Intuition may suggest that lower speed limits significantly increase travel times; however, both empirical evidence and computer simulation models disprove this, particularly as relates to a change from 25mph to 20mph speed limits in residential and urban areas, as will be discussed in detail.

As a prefatory matter, it is necessary to focus discussion only on those vehicle trips that would have any possibility of experiencing meaningful travel time increases - i.e., relatively short trips. Long vehicle trips would be logically unaffected by urban/residential speed limit changes. A 100-mile trip comprised of, say, 2 miles on residential roads and 98 miles on freeways would register no consequential travel time change under urban/residential 20mph speed limits; any time penalty incurred on residential roadway would represent a minuscule fraction of total travel time and thus be indiscernible against the whole.

Conversely, short trips predominantly traversing urban/residential 20mph candidate streets would potentially be subject to appreciable travel time increases. Generalized across a transportation system, it can be stated that, the shorter the trip, the greater the proportion of total travel on urban/residential areas. And, the greater the proportion of travel on urban/residential roads, the better the prospects for meaningfully longer travel

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[52] Blincoe, L., et al., "The Economic and Societal Impact of Motor Vehicle Crashes," U.S. Department of Transportation, National Highway Traffic Safety Administration, DOT HS 812013 (May 2015 (Revised)).

[53] Archer, J., et al., "The Impact of Lowered Speed Limits in Urban and Metropolitan Areas," Monash University Accident Research Centre (2008).

times. For this reason, analysis will be circumscribed to travel time changes on trips of 3 miles or fewer. Such circumscription is not overly restrictive, as trips 3 miles or less account for over 40% of all vehicular trips.[54]

Focusing analysis on this short-trip genus of vehicle travel, it has been shown that, for trips within urban and residential areas, travel time delays do not derive from posted speed limits. Instead, the primary generators of "delay" are intersections, traffic queues, and unilateral braking for cornering and turns. While turning speeds are unaltered by traffic speed limits, both intersection efficiency and traffic queuing are beneficially affected by 20mph speed limits (owing to reduced spacing, improved filtering, and decreased collisions).

Additional studies quantifying changes in travel duration due to speed limit changes find that reducing speed limits by approximately 5mph has essentially no effect on travel times. An analysis conducted in Australia determined that a 10kph (i.e., 6.2mph) speed limit reduction was associated with travel time increases of 3 percent in the short-term, and, following behavioral adaptation, 0.6 percent in the long-term.[55] Confirming this conclusion, it has been separately found that speed limit reductions in the range of 5mph increase travel times by about 1 percent.[56]

It is possible to estimate travel time impacts in Ashland using these findings. If an average speed of travel of 15mph (accounting for intersections, traffic, etc.) on vehicle trips occurring exclusively within urban/residential areas is achieved, then 1-mile, 2-mile, and 3-mile journeys would exhibit travel times of 4 minutes, 8 minutes, and 12 minutes, respectively.[57] Conservatively using the short-term travel time increase estimate of 3 percent, those travel times would increase by 7 seconds, 14 seconds, and 22 seconds, respectively, in a 20mph system. Since over 40% of vehicle trips cover 3 miles or fewer - and since it is shorter trips most likely to occur on urban/residential roads - a substantial share of all trips in targeted 20mph areas would experience travel time increases of well less than a minute.[58]

Two other empirical studies' findings corroborate these calculations. One shows that a 10kph (i.e., 6.2mph) speed limit reduction is associated with an increased average travel time of less than 26 seconds per trip (or

[54] Federal Highway Association 2009 National Household Travel Survey, "Vehicle Trips, Number of Vehicle Trips by Trip Distance Including Trips 2 Miles or Less."

[55] SMEC Australia and R.J. Nairn and Partners, "Effects of Urban Speed Management on Travel Time: Simulation of the Effects of Maximum Cruise Speed Changes in Melbourne," Federal Office of Road Safety (1999).

[56] Horeau, E. and S. Newstead, "An Evaluation of the Default 50km/h Speed Limit in Victoria," MUARC Report No. 261, Monash University Accident Research Centre (2006).

[57] This 15mph average speed is obtained using the Google Maps "Directions" feature for automobile travel around residential and urban portions of Ashland. Across a variety of routes, Google Maps indicates average travel times of 4 minutes per mile (i.e., 15mph).

[58] Federal Highway Association 2009 National Household Travel Survey, "Vehicle Trips, Number of Vehicle Trips by Trip Distance Including Trips 2 Miles or Less."

about 21 seconds, adjusted for a 5mph speed limit decrease) - roughly the calculated change for a 3-mile trip.[59] The second study finds that a 5kph (i.e., 3.1mph) speed limit reduction is associated with about 10 seconds longer travel time per mile (i.e., about 16 seconds per mile, adjusted for a 5mph speed limit decrease).[60] Both studies confirm that travel times in Ashland would change by well less than one minute per trip, or in the range of 3%, on vehicle travel occurring exclusively within urban/residential areas. And travel times would change by an even lower percentage on trip routes combining urban/residential and non-urban/residential streets. These calculations in all cases show maximum travel time increases since they do not account for VMT reductions generated by 20mph speed limits.[61]

Accordingly, there is reason to believe average vehicle travel times in Ashland would likely be materially unaffected, or at worst minimally and insignificantly increased, and perhaps even minimally reduced. To the extent there would be any travel time increases, they would be vanishingly small and measured in seconds.[62]

[59] Haworth, N., et al., "Evaluation of a 50km/h Default Urban Speed Limit for Australia," National Road Transport Commission, Melbourne (2001).

[60] Robertson, S. and H. Ward, "Valuation of Non-Accident Impacts of Speed," MASTER Working Paper R 1.2.2, VTT Communities and Infrastructure (1998).

[61] The difference between the short-term 3% and long-term 0.6% travel time increases reported by one study is explained by behavioral adaptation, which would include things such as modal substitution generating VMT reductions. Using the estimated 0.6% travel time increase generates expected travel time changes that do account for some measure of VMT response. For 1-mile, 2-mile, and 3-mile trips, a 0.6% travel time change translates to a 1.4 second, 2.9 second, and 4.3 second travel time increases, respectively.

[62] It may be perceived that increased drive times displace working hours and diminish earnings, leading to economic loss. Statistics showing concurrent increases in commute times and working hours in the U.S. belie this view. Work is not a substitute of driving. Also, the average American conducts 3.61 hours of work or working-related activities each day, leaving 20.39 hours of non-working time into which commuting time increases measured in seconds could be easily absorbed with ***de minimis*** economic impact. (See: U.S. Department of Labor, Bureau of Labor Statistics "American Time Use Survey - 2016 Results." Saad, L., "The '40-Hour Workweek Is Actually Longer - by Seven Hours," ***Gallup*** (August 29, 2014). Ingraham, C., "The Astonishing Human Potential Wasted on Commutes," ***Washington Post*** (February 25, 2016).)

3. Decreased System-Wide Fuel Consumption

Two distinct lines of inquiry must be addressed to understand the implications of 20mph speed limits on system-wide fuel consumption. The first is the extent to which the speed limit reduces or increases driving overall; and the second is the extent to which fuel consumption among cars in the road system is increased or reduced with lower speed limits.

On net, it is found that, while the fuel consumption among cars in the road system is not materially impacted by lower speed limits, reduced traffic in the transportation system reduces system-wide fuel usage. Overall fuel usage declines in 20mph speed limit networks.

Reduced Traffic Levels Generate Lower Fuel Consumption

When system-wide 20mph speed limits are adopted, modal substitution draws people out of automotive transport and into walking, cycling, and mass transit alternatives. This reduces individual automobile usage and decreases system-wide fuel requirements.

The directional effect of reduced automobile usage and attendant reduced VMTs is unambiguous: under a 20mph speed limit regime, the substitution effect places downward pressure on system-wide fuel usage. In the broadest sense, reduced VMTs would be expected to shrink fuel consumption by an amount roughly proportionate to the VMT reduction.[63] This framework will be used later to quantify the economic implications of reduced fuel usage.

Remaining Traffic's Fuel Consumption Is Not Materially Altered

With respect to vehicles that do traverse a 20mph roadway system versus a 25mph system, two offsetting factors affect how much fuel those automobiles use. The first relates to the energy costs of acceleration, and the second pertains to the relative fuel efficiencies of different cruising speeds. In general, these factors offset, resulting in no material difference in fuel usage rates between automobiles in a 20mph transportation system versus a 25mph network.[64] Nonetheless, some empirical studies have found substantial gains in fuel efficiency among vehicles in 20mph speed limit networks as a by-product of reduced speed limits - i.e., improved driver behavior. Each point is addressed below.

At lower speed limits, automobiles use less energy to reach a road's cruising speed. This is because the energy required to achieve a given speed is proportional to the square of that speed. That is, a non-linear relationship

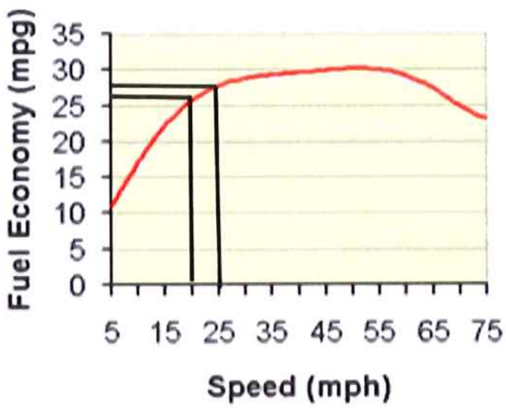
[63] Naturally, factors other than VMTs bear on fuel consumption reductions; fuel consumption could decrease by more or less than the decrease in VMTs because not all vehicle types consume fuel at similar rates, and there may be a systematic bias that favors modal substitution for certain types of vehicles. Driving style of modal switchers also bears on the analysis, as do the particulars of transportation system design.

[64] "An Evaluation of the Estimated Impacts on Vehicle Emissions of a 20mph Speed Restriction in Central London," Transport and Environmental Analysis Group, Centre for Transport Studies, Imperial College London (April 2013).

between target speed and fuel consumption is realized during acceleration; as the target speed increases, fuel usage grows exponentially. As such, the energy required to attain 30mph or 25mph dwarfs that to achieve 20mph, and repeated acceleration to these higher speeds reduces fuel efficiency relative to a 20mph system.[65]

On the other hand, most automobiles maximize their cruising fuel efficiency at speeds greater than 20mph. It is observed that fuel efficiency for most automobiles peaks at cruising speeds of approximately 55mph, with efficiency penalties associated with higher and lower cruising speeds. There is a cruising-speed fuel efficiency loss associated with a 20mph speed limits relative to 25mph limits. The efficiency difference between 20mph and 25mph cruising speeds is nevertheless small, having been calculated as a roughly 8% difference in fuel economy levels once cruising speed has been attained (that is, ignoring the effects of reaching the higher speeds).[66] Figure 5, from fueleconomy.gov, illustrates the relative insensitivity of fuel efficiency to cruising speed levels above 20mph, and the difference between fuel efficiency levels at 20mph versus 25mph (vertical and horizontal black lines have been added for clarity). The effect is relatively small and, importantly, only a small share of any urban/residential trip occurs at cruising speed.[67]

Figure 5



Since acceleration and cruising speed factors are directionally offsetting, and since myriad other particulars must be known to determine which factor dominates in a given setting,[68] the result of any generalized analysis is that, within a speed limit range of approximately 20mph to 25mph, there is no material difference in fuel economy among vehicles in a transportation system.

It is nonetheless worth noting that driving style has substantial bearing on fuel usage, and driving style has been shown to change in response to speed limits. Whether a driver operates a vehicle conservatively or aggressively has dramatic implications for fuel usage since aggressive driving tends to be marked by rapid speed

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65" An Evaluation of the Estimated Impacts on Vehicle Emissions of a 20mph Speed Restriction in Central London," Transport and Environmental Analysis Group, Centre for Transport Studies, Imperial College London (April 2013).

66 The Automobile Association calculates that the percentage difference in fuel economy between a cruising speed of 20mph and 30mph is about 8.5%. "20mph Roads and CO2 Emissions," The Automobile Association website (accessed May 2018).

67 Archer, J., et al., "The Impact of Lowered Speed Limits in Urban and Metropolitan Areas," Monash University Accident Research Centre (2008).

68 These include the types of automobiles used in the affected transportation system, prevailing driving styles, particulars of road and intersection design, the typical trip lengths of users of the road system, etc.

changes that demand higher fuel usage.[69] Fuel consumption among aggressive drivers has been shown to be as much as *four times* that of non-aggressive drivers.[70] In addition, a single aggressive driver can cause other drivers to operate their vehicles less efficiently by setting off ripple effects that reduce overall traffic smoothness. It has been shown that, with 20mph speed limits, reports of aggressive driving behaviors decline 40%,[71] so it would be expected that reduced aggressiveness in 20mph systems would benefit overall fuel efficiency as a by-product of reduced speed limits.

Indeed, in at least two instances of empirical study, the foregoing logic manifested quantitatively in measured driver behaviors and fuel usage. Upon the introduction of 30kph (i.e., 20mph) speed limit zones in Germany, it was observed that gear change events (a proxy measure for acceleration and cruising speed values) and braking events declined by 12% and 14%, respectively. Since reductions in gear changes and braking collectively reflect smoother driving patterns, the behavioral changes resulted in a measured 12% reduction in fuel usage among drivers.[72] In a second study of urban traffic, it was found that "reduced speeds and more even driving have resulted in 26% reduction in fuel consumption."[73]

These findings are echoed in a Department for Transport circular which states the following:

> There may also be environmental benefits [associated with 20mph speed limits] as, generally, driving more slowly at a steady pace will save fuel and reduce pollution, unless an unnecessarily low gear is used.[74]

69" An Evaluation of the Estimated Impacts on Vehicle Emissions of a 20mph Speed Restriction in Central London," Transport and Environmental Analysis Group, Centre for Transport Studies, Imperial College London (April 2013).

70 Archer, J., et al., "The Impact of Lowered Speed Limits in Urban and Metropolitan Areas," Monash University Accident Research Centre (2008).

71 Department for Transport, "Interim Evaluation of the Implementation of 20mph Speed Limits in Portsmouth" (2010).

72 Hass-Klau, Carmen, ***An Illustrated Guide to Traffic Calming*** (1990).

73 Mitchell, P., "Speed and Road Traffic Noise: The Role that Lower Speeds Could Play in Cutting Noise from Traffic," A Report Commissioned by the UK Noise Association (December 2009).

Van Beek, W., et al., "The Effects of Speed Measures on Air Pollution and Traffic Safety," Proceedings of the European Transport Conference (2007).

74 Department for Transport, "Setting Local Speed Limits," Department for Transport Circular (January 2013).

The U.S. Department of Transportation Federal Highway Administration concurs: "Slower moving vehicles make less noise and, generally, emit fewer pollutants…fuel consumption reductions of 10 to 12 percent have been reported." See: Federal Highway Administration Course on Bicycle and Pedestrian Transportation, Lesson 11, "Traffic Calming."

In sum, since there are reasons why a 20mph speed limit regime would not necessarily result in improved fuel economy per mile driven, the most conservative argument is that there would not be meaningful change in drivers' fuel usage in a 20mph regime. Nonetheless, at least two empirical studies showing enhanced fuel economy per mile driven in reduced-speed networks highlight the possibility of diminished fuel usage per vehicle mile in 20mph systems, particularly when driver behavior improves.[75]

Economic Implications of Reduced Fuel Consumption

The absence of any substantive change in fuel economy per vehicle mile driven, accompanied by a reduction in system-wide VMTs due to modal substitution, implies a system-wide reduction in fuel utilization with 20mph speed limits. Considering the extent of traffic volume reductions observed in regions adopting 20mph speed limits, potential fuel savings can be sizable.[76]

It is possible to define the approximate fuel savings and attendant financial savings this effect would generate in Ashland. The Oregon Department of Transportation estimates that citywide annual VMT in 2019 was 58,987,174 miles. Shifts in mode of travel with slower maximum speeds would reduce this total by 2,949,359 miles per year. Using the U.S. fleet fuel economy of 25 miles to the gallon allows for the calculation of the gallons of gasoline that would <u>not</u> be consumed with slower maximum speeds, 117,974 gallons per year. Multiplying the estimated fuel savings by the current cost of gasoline, $2.59 yields a total annual economic saving of $305,554.

These calculations are summarized in Table 2.

[75] It has also been shown that, in 20mph systems, traffic idling at intersections can be reduced as a result of improved filtering. Since idling for 10 seconds or longer is associated with fuel wasting, improved junction filtering would be expected to limit idling times and thus reduce fuel consumption.

Gaines, L., et al., "Which Is Greener: Idle, or Stop and Restart? Comparing Fuel Use and Emissions for Short Passenger Car Stops," U.S. Department of Energy, Argonne National Laboratory (2012).

[76] Department for Transport Traffic Advisory Leaflet 9/99 (June 1999), "20 mph Speed Limits and Zones."

Steer Davies Gleave, "Research into the Impacts of 20mph Speed Limits and Zones, (November 2014).

Table 2

Estimate of Annual Fuel Savings with Slower Maximum Speeds		
	Baseline (G)	Slower Maximum Speed Estimate (H)
A. VMT within City per year (2019)[77]	58,987,174	56,037,815
B. U.S. Fleet Fuel Economy (miles per gallon)[78]	25	25
C. Estimated Fuel Consumption by Residents (in town) (A/B)	2,359,487	2,241,513
D. Savings in gallons (w/ slower maximum speeds) (G - H)		117,974
E. Estimated Cost per gallon (regular gasoline)[79]		$2.59
F. Savings from slower maximum speeds (D*E)		$305,554

[77] VMT estimates for Ashland vary between roughly 59 and 76 million miles. The most conservative estimate, the one used in this analysis, is based upon the Oregon Department of Transportation's Regional Strategic Planning model (see https://www.oregon.gov/ODOT/Planning/Documents/Oregon-Strategic-Assessment-RSPM-Users-Guide.pdf. The highest VMT estimate for Ashland, at 76 million miles, is derived from statewide data and distributed to local jurisdictions based upon population. The third estimate utilizes vehicle telematics, which relies upon cell phone and GPS location data, to estimate VMT. This method provides a VMT estimate of 71 million miles. Information provided by Stu Green, City of Ashland, Climate and Energy Analyst.

[78] Highlights of the Automotive Trends Report, US EPA, https://www.epa.gov/automotive-trends/highlights-automotive-trends-report#:~:text=Figure%20ES%2D1.&text=Fuel%20economy%20increased%20by%200.2,0.4%20mpg%20to%2025.5%20mpg (accessed 11/25/2020)

[79] AAA; https://gasprices.aaa.com/?state=OR (accessed 12/26/2020)

4. Lowered Carbon Emissions

Significant decreases in carbon emissions are registered in areas with 20mph speed limits. Since fewer vehicle miles are traveled in 20mph systems, corresponding reductions in pollution are realized. Additionally, among residual VMTs, lower speeds tend to be associated with reduced noise pollution and particulate matter dispersion from vehicle tires, clutches, and brakes.

Lower Carbon Emissions from Fewer Vehicle Miles Traveled
"Modal substitution causes more users of the transportation system to walk or cycle when 20mph speed limits are enacted, thereby reducing VMTs. Fuel consumption commensurately declines and, in turn, pollution levels diminish, both with respect to carbon-dioxide ("CO_2") and particulate matter.[80]

Carbon-Dioxide
One important measure of a transportation system's air pollution is the quantity of CO_2 greenhouse gas it emits. Generally, CO_2 emissions decline linearly with VMT reductions. Thus, were Ashland's VMTs to decline in a manner consistent with empirically studied 20mph networks, Ashland's automobile fleet would be expected to emit about 5% fewer tons of CO2.

A general estimate of potential tons of CO_2 reduction can be given through the following analysis. The Oregon Department of Transportation, in 2019, estimated that total vehicle miles of travel (VMT) within the City of Ashland totaled 58,987,174 miles. By lowering the maximum speeds in the City, VMT is expected to decline by 5% or by almost 3 million miles. Using the US fleet fuel economy of 25 miles per gallon allows the computation of the estimated savings, measured in gallons per year; 117,974 gallons/year. Each gallon of gasoline produces 20 pounds of carbon dioxide (CO_2)[81] meaning the City's residents, by choosing to walk or bicycle rather than drive, can reduce CO_2 emissions by 2,359,487 pounds or 1,070 metric tons per year.

These calculations are shown in Table 3.

Economic Implications of Reduced Carbon-Dioxide Emissions

According to research published in 2015, each metric ton of CO_2 generated by emissions carries an economic damages value (often referred to as "social cost") of approximately $220.[82] The Environmental Protection

[80] In addition to this effect, reductions in aggressive driving reduce CO2 emissions since aggressive drivers generate approximately four times the CO2 output of non-aggressive drivers.

Archer, J., et al., "The Impact of Lowered Speed Limits in Urban and Metropolitan Areas," Monash University Accident Research Centre (2008).

[81] https://www.fueleconomy.gov/feg/contentincludes/co2_inc.htm#:~:text=It%20seems%20impossible%20that%20a,the%20carbon%20and%20hydrogen%20separate

[82] Moore, F. and D. Diaz, "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy," ***Nature Climate Change***, Vol. 5 (2015).

Than, K., "Estimated Social Cost of Climate Change Not Accurate, Stanford Scientists Say," ***Stanford News*** (January 12, 2015).

Agency, on the other hand, estimated the social cost of a metric ton of CO2 in 2015 to be about $36.[83] Other estimates peg costs in the middle of this range.[84] Without taking a position on the merits and limitations of any particular approach or set of assumptions used in valuing CO_2 social costs, for purposes of this analysis, an approximate midpoint of $125 in estimated social costs per metric ton of CO_2 emissions will be used. A reduction in emissions of 1,070 metric tons would equate to $133,750 of annual savings in implied damages. These calculations are shown in Table 3.

Table 3

Estimate of Annual CO_2 emission reduction with 20MPH Speed Limits	
A. VMT in Ashland per year (2019) [85]	58,987,174
B. VMT with Reduced Maximum Speeds (A - (A - .05)	56,037,815
C. Difference in citywide VMT (A - B)	2,949,359
D. Average assumed fuel economy (miles per gallon) [86]	25.0
E. Savings measured in gallons of fuel by lowering the maximum speeds (C / D)	117,974
F. CO_2 emissions in pounds per gallon of gasoline	20
G. CO2 emissions savings by lowering the maximum speeds (E * F)	2,259,487
H. CO2 Reductions (measured in metric tons) (G / 2205)	1,070
I. Estimated social cost of CO_2 per metric ton	$125
J. Estimated social benefit from reducing CO2 emissions (H * I)	$133,758

Micro-plastics & Other Non-exhaust Traffic-related Particulate Matter

Another measure of environmental pollution can be found in plastics dispersed into the environment as a consequence of the mechanical abrasion (i.e., wearing down) associated with car tires. Plastics pollution increases as a function of VMTs, and research indicates that "wear and tear from tires significantly contributes to the flow of (micro-)plastics into the environment."

[83] The EPA currently estimates the social cost of carbon to be around $1. There appears to be zero economic merit to this figure and it is accordingly ignored here.

Archived Environmental Protection Agency Website, "The Social Cost of Carbon: Estimating the Benefits of Reducing Greenhouse Gas Emissions" https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html (accessed June 2018).

[84] Harvey, C., "Should the Social Cost of Carbon Be Higher?" *Scientific American* (November 2017).

[85] Oregon Department of Transportation, 2019 (per Stu Green)
[86] Highlights of the Automotive Trends Report, US EPA, https://www.epa.gov/automotive-trends/highlights-automotive-trends-report#:~:text=Figure%20ES%2D1.&text=Fuel%20economy%20increased%20by%200.2,0.4%20mpg%20to%2025.5%20mpg (accessed 11/25/2020)

> The relative contribution of tire wear and tear to the total global amount of plastics ending up in our oceans is estimated to be 5-10%. In air, 3-7% of the particulate matter (PM2.5) is estimated to consist of tire wear and tear.[87]

Aside from micro-plastics, other non-exhaust traffic-related particulate matter generation comprises an important component of traffic environmental impact. "Non-exhaust particles can be generated either from non-exhaust sources such as brake, tire, clutch and road surface wear or already exist in the form of deposited material at the roadside and become resuspended due to traffic-induced turbulence." Within urban and suburban settings, higher VMTs correspond with higher non-exhaust particulate matter levels.[88]

Thus, both micro-plastics generation and particulate matter pollution would be expected to decline as a result of lower VMTs brought on by 20mph speeds.

Lower Speeds and Smoother Traffic Generate Less Particulate Matter

As traffic speeds increase and as traffic patterns become more interrupted (i.e., marked by "stop-and-go" driving), the levels of particulate matter generated by non-exhaust traffic-induced factors, such as tires and brakes, increases. Accordingly, lower average traffic speeds and smoother traffic flows associated with a 20mph system would contribute to reductions in plastics pollution and particulate matter dispersion.

Since 20mph speed limit networks are associated with lower traffic speeds, reduced gear shifts, less braking events, and lower levels of aggressive driving behavior, reduced total particulate matter and lower tire wear levels would tend to be associated with 20mph systems.[89] Indeed, tire-related pollution depends upon speed and driving style (i.e., faster and more aggressive driving generate greater pollution),[90] while the direct generators of particulate matter pollution are braking events and gear shifts.[91]

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[87] Kole, P., et al., "Wear and Tear of Tyres: A Stealthy Source of Microplastics in the Environment," *International Journal of Environmental Research and Public Health*, Vol. 14, No. 10 (2017).

[88] Grigoratos, T. and G. Martini, "Brake Wear Particle Emissions: A Review," *Environmental Science and Pollution Research International*, Vol. 22 (2015).

[89] Hass-Klau, Carmen, *An Illustrated Guide to Traffic Calming* (1990).

Department for Transport, "Interim Evaluation of the Implementation of 20mph Speed Limits in Portsmouth" (2010).

[90] Kole, P., et al., "Wear and Tear of Tyres: A Stealthy Source of Microplastics in the Environment," *International Journal of Environmental Research and Public Health*, Vol. 14, No. 10 (2017).

[91] Grigoratos, T. and G. Martini, "Brake Wear Particle Emissions: A Review," *Environmental Science and Pollution Research International*, Vol. 22 (2015).

5. Decreased Road Capacity Requirements & Saved Infrastructure Expenses

There are two means by which a 20mph speed limit system decreases vehicular roadway capacity demands. The first is reduced overall VMTs, and the second is enhanced efficiency of roadway space utilization, particularly during peak travel times. Both factors imply savings on infrastructure costs. Those savings far outweigh costs of implementing 20mph speed limits in Ashland.[92]

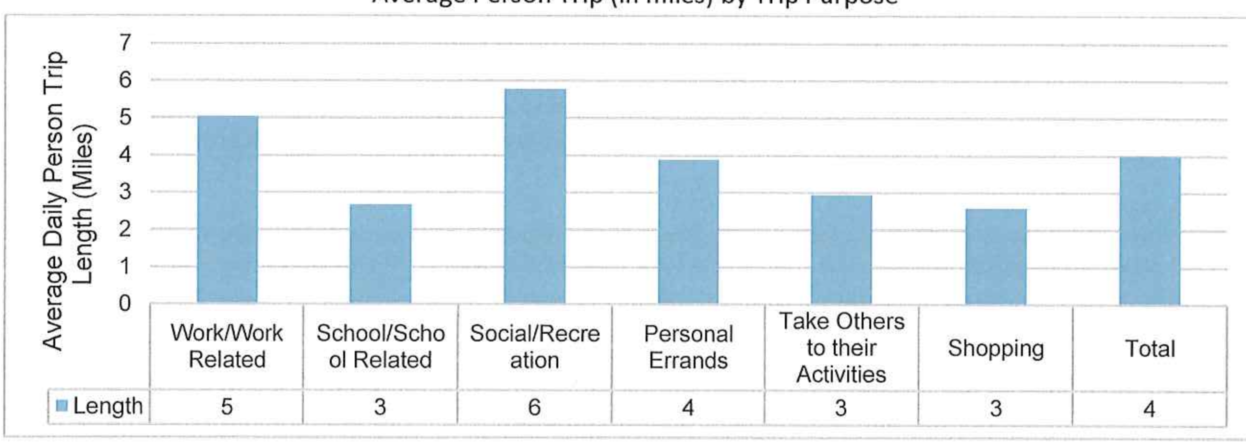
20mph Speed Limits Reduce Road Capacity Needs

With lower VMTs, consumption of roadway capacity by vehicles declines, freeing roadway resources. This reduction in VMTs is not realized uniformly across a transportation system; rather, network "bottlenecks" tend to experience the greatest traffic reductions. This is due to the mechanics of how modal substitution occurs in a 20mph system.[93]

To illustrate how bottlenecks recognize disproportionately large volume relief, it is instructive to consider typical vehicular trip distances. Nationally, 20% of all vehicular trips are not more than 1 mile in distance, while 32% of trips cover 2 miles or less, and 42% are capped at 3 miles.[94] Similarly, the Rogue Valley Metropolitan Organization's (MPO) data shows that, regardless of trip purpose, trips within the MPO are short, as illustrated in Figure 6.

Figure 6

Average Person Trip (in miles) by Trip Purpose



92 To the extent VMT reductions enable reduced or even slowed construction of new road lane-miles, future structural maintenance costs would be reduced, with potential implications for City budgeting.

93 Cass, N. and J. Faulconbridge, "Commuting Practices: New Insights into Modal Shift from Theories of Social Practice," ***Transport Policy***, Vol. 45 (2016).

94 Federal Highway Association 2009 National Household Travel Survey, "Vehicle Trips, Number of Vehicle Trips by Trip Distance Including Trips 2 Miles or Less."

Thus, a substantial portion of traffic derives from "short-trip" travel. And, in centralized transportation system networks, short vehicle trips comprise a large share of bottleneck traffic (since centralized nodes are where vehicles become funneled and where bottlenecks subsequently occur). Substitution from driving to walking or cycling is most likely to occur when the total distance traveled is lowest, so it follows that shorter trips contributing 40% or more to bottleneck congestion experience the highest rates of modal substitution.[95] Modal substitution thus generates a disproportionately large relief of traffic demand at the points most typically identified as bottlenecks and candidates for roadway expansion.

Superior junction filtering and vehicle spacing in 20mph systems also reduce road supply needs during peak travel hours since vehicular traffic on the roads makes better use of the available space. This effect frees more roadway capacity, particularly at intersections beleaguered by long queues and wait times (i.e., bottlenecks). Traffic throughput efficiency with respect to road supply thereby increases, further reducing perceived needs for additional lane-miles.

Through these two complementary mechanisms, existing vehicular roadway infrastructure can accommodate population growth, a consideration of significance in Ashland given anticipated future population gains.[96] A corollary of this increased effective capacity is that construction of fewer additional lane-miles would be implicated, saving Ashland funds on roadway expansion and future maintenance costs.[97]

Cost of Implementing 20mph Speed Limits Is Low

It is possible to estimate costs that would be incurred by the City of Ashland if 20mph speed limits are adopted by considering the experience of Portland, Oregon, in its rollout of 20mph speed limits, which took effect April 1, 2018.[98] Since both Ashland and Portland are cities in Oregon (and thereby have identical state-level traffic

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[95] Around 74% of all bike trips in the U.S. and over 93% of walking trips cover 3 miles or less. At distances above 3 miles, trip shares for both cycling and walking fall precipitously, suggesting it is at around the 3-mile threshold that modal substitution effects would largely diminish. Longer trips would more likely use roadways outside a city's urban/suburban transportation system, including freeways, and would thus contribute less to bottleneck congestion per VMT.

U.S. Department of Transportation, Federal Highway Administration, 2009 National Household Travel Survey (data extraction tool accessed June 2018).

[96] "Jackson County and Ashland Population Forecast, Planning Commission Presentation, https://www.ashland.or.us/SIB/files/2019-09_24_Population_Forecast_PRES.pdf (September 26, 2019).

[97] In addition to lower lane-mile requirements, reduced parking capacity would be implicated by VMT reductions, thus reducing space, cost and upkeep requirements for new vehicle parking spots. The cost of a new parking space in a structured parking garage is approximately $15,000.

Flusche, D., et al., "The Bottom Line: How Bicycle and Pedestrian Projects Offer Economic Benefits to Communities," Pedestrian and Bicycle Information Center Webinar Presentation (May 7, 2013).

[98] The City of Portland, Portland Bureau of Transportation Website "Residential Speed Limit Reduction" (accessed June 2018).

laws), and since both cities would utilize the same legislative path for adopting 20mph speed limits, it follows that Portland's project costs can inform expectations of cost in Ashland.

Portland's transportation system encompasses approximately 4,842 lane-miles,[99] of which roughly 3,000 lane-miles received 20mph speed limit designations.[100] Encompassed in the rollout was the installation of about 2,000 new speed limit signs around the city,[101] an undertaking with costs pegged at $300,000.[102]

Scaling down the project cost to Ashland's size entails consideration of Ashland's lane-miles most likely to be subject to 20mph speed limits and then applying a pro-rata cost figure to those lane-miles. Ashland has approximately 218 lane-miles of roadway, with 185 that are posted at 25mph and have average daily traffic (ADT) volumes under 2,000 and could be immediate candidates for 20mph speed limits.[103] Accordingly, Ashland's 20mph rollout would encompass about 6.2% of Portland's affected lane-mileage (i.e., 185 / 3,000). Assuming Ashland would install new speed limit signs at the same rate and cost as Portland, then Ashland's estimated cost of new signage would run to approximately $18,500.

However, the particular state statute that applies to Ashland, ORS 810.180(10), requires not only that the street have fewer than 2,000 ADT but also that 85% of the motorists drive the particular roadway at less than 30mph.

> ORS 810.189(10): "The highway is located in a residence district.
> (b)The statutory speed may be overridden by a designated speed only if:
> (A)The road authority determines that the highway has an average volume of fewer than 2,000 motor vehicles per day, more than 85 percent of which are traveling less than 30 miles per hour; and
> (B)There is a traffic control device on the highway that indicates the presence of pedestrians or bicyclists.
> (c)The road authority shall post a sign giving notice of the designated speed at each end of the portion of highway where the designated speed is imposed and at such other places on the highway as may be necessary to inform the public. The designated speed shall be effective when signs giving notice of the designated speed are posted.

[99] The City of Portland, Portland Bureau of Transportation Website "How Portland's Streets Are Maintained and Repaired" (accessed June 2018).

[100] Friedman, G., "3,000 Miles of Portland Streets May Get Slower Speed Limits Under New Bill," *The Oregonian* (April 24, 2017).

The City of Portland, Portland Bureau of Transportation Website "Residential Speed Limit Reduction" (accessed June 2018).

[101] The City of Portland, Portland Bureau of Transportation Website "Residential Speed Limit Reduction" (accessed June 2018).

[102] Njus, E., "Portland City Council Approves 20 mph Speed Limit on Residential Streets," *The Oregonian* (January 18, 2018).

[103] GIS analysis using data provided by the Ashland Public Works Department, November, 2020

Consequently, Ashland may need to conduct speed studies and post additional signs than Portland. With that in mind, it is estimated that the City's cost to reduce maximum speeds could total as much as $100,000.

6. Improved Public Health

The public health consequences of 20mph speed limits are far-reaching and implicate many facets of life. Since it is unlikely any review can comprehensively capture the benefits society realizes with slower traffic speeds and lower driving levels, this section is not intended to be categorical in coverage. Rather, it briefly surveys certain empirical findings relevant to Ashland's potential adoption of 20mph speed limits, focusing on traffic collisions, pollution, and the obesity and diabetes health epidemics.[104]

Notwithstanding the limited coverage of public health effects discussed in this report, the substantial breadth of public health impacts brought about with 20mph speed limits is notable. In summary of the widespread value of 20mph speed limits on public health, one University of Oxford researcher states:

> ...when asked what single policy I would suggest [to improve public health], I always reply '20mph' or, if I'm being a little more verbose: 'twenty's plenty.' This normally elicits some surprise. The person I am speaking to usually expects me to suggest reducing poverty by reducing unnecessary privileges for the rich, narrowing economic inequalities, raising social mobility, or improving health services or education; not simply slowing cars down. All those other things are very laudable, but if you want to do just one thing, then the thing you can actually do, the one thing that has now been done in over one hundred local authorities..., the thing that makes a difference that you can feel, see and measure straight away, is to stick a sign that says 20mph [on posts] where you live. And, fortunately, it is now (almost) as easy as that.[105]

Fewer Collisions Improve Health and Make Health Outcomes More Equitable

Overwhelming empirical evidence, some of which is outlined earlier in this report, chronicles the power of 20mph speed limits to reduce both the quantity and severity of traffic collisions. Drivers, passengers, motorcyclists, pedestrians, cyclists, and children realize significant safety and health gains. A review of 20mph speed limit regimes published in the *Journal of Public Health* concludes that: "Twenty mile per hour zones and limits are effective means of improving public health via reduced accidents and injuries."[106] More evidence will not be presented here to elaborate on this point, but volumes remain available to testify to the significance of 20mph speed limits in securing public well-being.

[104] Other areas of public health that are not addressed, but which have been found to benefit from reduced traffic speeds/levels or from increased non-automotive transport levels include social health, mental health, and depression. See, for instance: Leyden, K., "Social Capital and the Built Environment: The Importance of Walkable Neighborhoods," ***American Journal of Public Health***, Vol. 93, No. 9 (2003).

[105] Dorling, D., "20mph Speed Limits for Cars in Residential Areas, by Shops and Schools," Nine Local Actions to Reduce Health Inequalities, University of Oxford.

[106] Cairns, J., et al., "Go Slow: An Umbrella Review of the Effects of 20mph Zones and Limits on Health and Health Inequalities," ***Journal of Public Health***, Vol. 37, No. 3 (2015).

A related point, and one that has not yet been addressed in this report, relates to questions of socioeconomic equity in the public health implications of 20mph speed limits. It has been found that traffic collisions are disproportionately damaging for those with lower incomes and less education. One's chances of being killed or seriously injured in traffic crashes rise as one's salary or education level falls, with low-income pedestrians *twice as likely to be killed* as higher-income pedestrians.[107] Traffic accidents accordingly represent a significant source of social inequality and, by extension, show that traffic speed limits above 20mph are a forceful promoter of inequity in a transportation system.[108]

While the economics are complex and will only be mentioned in brief here, it is generally the case that the lower a person's income and education, the more likely that person is to lack health insurance. In the event emergency care is required, the individual will either accumulate paralyzing medical debt, or, owing to an inability to pay medical costs, effectively receive "charity care" funded by outside money.[109] Hence, the long-run personal economic implications of traffic collisions inequitably bear on those with lower incomes, and public funds are disproportionately funneled into the treatment of injuries generated by traffic collisions.[110] In Ashland, this issue is acute, since it is estimated that almost 10% of the population under 65 years old lacks health insurance.[111] Speed limits of 20mph help pare this root of social inequality by cutting traffic collisions and injuries - especially among groups that simultaneously carry both the greatest injury risk and the lowest health insurance coverage - while also helping improve the financial efficiency of local health care provision.[112]

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[107] Harper, S., "Trends in Socioeconomic Inequalities in Motor Vehicle Accident Deaths in the United States, 1995-2010," ***American Journal of Epidemiology***, Vol. 182, No. 7 (2015).

Morency, P., "Neighborhood Social Inequalities in Road Traffic Injuries: The Influence of Traffic Volume and Road Design," ***American Journal of Public Health***, Vol 106, No. 2 (2012).

Maciag, M., "America's Poor Neighborhoods Plagued by Pedestrian Deaths," Governing Research Report (August 2014).

[108] Dorling, D., "20mph Speed Limits for Cars in Residential Areas, by Shops and Schools," Nine Local Actions to Reduce Health Inequalities, University of Oxford.

[109] "Key Facts about the Uninsured," Henry J. Kaiser Family Foundation (September 19, 2017).

[110] Lam, B., "Who Pays Hospital Bills When Patients Can't?" ***The Atlantic*** (October 13, 2015).

"A Floor-and-Trade Proposal to Improve the Delivery of Charity-Care Services by U.S. Nonprofit Hospitals," The Hamilton Project, The Brookings Institution, Policy Brief 2015-07 (2015).

[111] United States Census Bureau, "Ashland, Oregon QuickFacts" (accessed December 8, 2020).

[112] St. Charles Health System, Inc. is a not-for-profit Oregon corporation and provides a financial assistance program for those unable to pay for the cost of their care, a practice sometimes referred to as "charity care" in the U.S. healthcare system.

Oregon Health Authority, Division of Health Policy & Analytics, Office of Health Analytics "Oregon Acute Care Hospitals Financial and Utilization Trends, 4th Quarter 2016," (June 2017).

Lower Pollution Levels Enhance Public Health and Reduce Medical Costs

Earlier in this report the influence of traffic speed and traffic volume on various pollutants was described. Levels of CO_2, micro-plastics, particulates, and road noise decline in response to slower traffic and lower VMTs. The consequences of reduced pollution on future environmental remediation costs and on resident life quality were also mentioned. Unstated were the profound human health consequences of air and noise pollution and the salutary public health effects of reducing those pollutants.

Traffic-related air pollution has been shown as a statistically significant predictor of an array of health maladies, including childhood asthma,[113] cardiovascular risk,[114] as well as inflammation and cancer,[115] and links to pregnancy disorders have also been suggested.[116] Traffic noise, for its part, has been found to contribute to hypertension, heart attack risk, childhood cognitive impairment, and sleeping disorders.[117]

While quantifying the financial consequences of improving public health levels by reducing air and noise pollution will not be attempted, it is clear that the directional relationship between pollution and costs associated with disease and mortality is positive, and it is further apparent that the magnitude of pollution-related healthcare costs is quite high. Even modest pollution reductions would substantially improve public health outcomes and reduce overall medical costs borne by Ashland's residents and health care providers.

Increased Walking and Cycling Reduce Incidence of Obesity and Diabetes

[113] Khreis, H. and MJ Nieuwenhuijsen, "Traffic-Related Air Pollution and Childhood Asthma: Recent Advances and Remaining Gaps in the Exposure Assessment Methods," ***International Journal of Environmental Research and Public Health***, Vol. 14, No. 3 (2017).

[114] Nawrot, T., "The Detrimental Health Effects of Traffic-Related Air Pollution," ***American Journal of Respiratory and Critical Care Medicine***, Vol. 179, No. 7 (2009).

[115] Krzyzanowski, M., B. Kuna-Dibbert and J. Schneider (Eds.), "Health Effects of Transport-Related Air Pollution," World Health Organization (2005).

[116] Raz, R., et al., "Traffic-Related Air Pollution and Autism Spectrum Disorder: A Population-Based Nested Case-Control Study in Israel," ***American Journal of Epidemiology***, Vol. 187, No. 4 (2018).

Krzyzanowski, M., B. Kuna-Dibbert and J. Schneider (Eds.), "Health Effects of Transport-Related Air Pollution," World Health Organization (2005).

[117] Pignier, N., "The Impact of Traffic Noise on Economy and Environment: A Short Literature Study," KTH Royal Institute of Technology (2015).

Obesity and diabetes constitute two of the most significant health epidemics facing American society. They afflict tens of millions of people and generate hundreds of billions of dollars in medical expenses nationally.[118]

Within Jackson County, Oregon, approximately 25% of adults are obese.[119]

Obesity and diabetes are linked to sedentary lifestyle factors and can be prevented and managed with physical activity. An increase in activity reduces risk of onset and intensification.[120] Owing to the simple relationship between physical movement and affliction with obesity or diabetes, it follows that modal substitution from driving to walking or cycling would reduce the severity and affliction rates of obesity and diabetes in the community by replacing a sedentary activity, driving, with non-sedentary ones, walking and cycling, in people's routines.

As with the inequitable socioeconomic profile of traffic collisions, obesity and diabetes express a similarly steep relationship across the socioeconomic gradient. Both diseases show strong inverse relationships with income and education level. As income and education levels decline, obesity and diabetes rates increase.[121] Transportation systems that discourage modal substitution into walking and cycling due to unsafe speed limits accordingly impart disproportionately large harms on those people at the lowest socioeconomic status levels. This is because those with less income and education tend to be simultaneously those most at risk for injury or fatality while walking (and thus most discouraged from it) and those whose statistical health profiles could most benefit from walking.[122] Addressing equitability effects in a transportation system requires consideration of this factor.

Beyond 20mph speed limits' modal substitution effects, lower speed limits also can encourage incremental walking trips made solely for exercise or pleasure among those in the lowest income brackets. This effect would

[118] "Adult Obesity Causes & Consequences," Centers for Disease Control and Prevention Website (accessed June 2018).

Petersen, M., "Economic Cost of Diabetes in the U.S. in 2012," ***Diabetes Care***, Vo. 36 (2013).

[119] "Open Data Network,
https://www.opendatanetwork.com/entity/0500000US41029/Jackson_County_OR/health.health_behaviors.adult_obesity_value?year=2015
(accessed December 8, 2020)

[120] "Obesity Prevention Source," Harvard T.H. Chan School of Public Health (accessed June 2018).

[121] Ogden, C., et al., "Prevalence of Obesity Among Adults, by Household Income and Education - United States, 2011-2014," ***MMWR Morbidity and Mortality Weekly Report (CDC)***, Vol. 66, No. 50 (2017).

Rabi, D., et al., "Association of Socio-Economic Status with Diabetes Prevalence and Utilization of Diabetes Care Services," ***BMC Health Services Research***, Vol. 6 (2006).

[122] Morency, P., "Neighborhood Social Inequalities in Road Traffic Injuries: The Influence of Traffic Volume and Road Design," ***American Journal of Public Health***, Vol 106, No. 2 (2012).

generate advantageous health results. Institution of 20mph speed limits would reduce pedestrian risks and remove an impediment to increased physical activity for those most at risk for obesity and diabetes.

CONCLUSION

Before enumerating specific findings of this report, one foundational conclusion must be emphasized. Adoption of 20mph speed limits in a transportation system is an important, and perhaps necessary, step toward enhancing that system's safety, efficiency, reliability, and equitability. It is not, however, a standalone cure for all transportation system problems, and information outlined in this report should not be mistaken for suggesting 20mph speed limits are a panacea. Two points illustrate why.

First, the breadth of success in improving safety and generating economic gains associated with 20mph speed limits is modulated by the particulars of its implementation. The greater a commitment to public education, police enforcement of speeds, and installation of complementary traffic calming measures, the greater the traffic speed and traffic volume responses will be, and hence the greater the safety and economic gains will be. It is true that simply replacing speed limit signs has been shown to produce improvements, and those "sign-only" benefits are a good first step. Yet, the full array of social and economic returns will not be realized without supplemental initiatives like education, enforcement, and calming. Thus, any contemplation of adopting 20mph speed limits also implies adoption of some level of complementary policies to support that speed limit change. Indeed, this report reflects an "average" implementation of 20mph speed limits, involving more than changing signs but less than large-scale reconfiguration of roadways to calm traffic as some cities have done. Greater results than those calculated here could be obtained with an above-average commitment to implementation and complementary policies.

Second, even with a "full" implementation of 20mph limits and supportive ancillary measures, a transportation system will still be susceptible to traffic deaths and injuries, system bottlenecks, fuel and resource wasting, travel time variability, and inequitable distributions of the system's benefits and costs. Accordingly, while 20mph speed limits and complementary measures are crucial to improving a transportation system, additional policies to promote safety and social efficiency are required to fully address transportation system needs. The findings of this report should not be mistaken to suggest that 20mph speed limits are a cure-all; they are not. They are important, and they are socially and economically compelling, but they are not, on their own, sufficient.

Finally, Ashland's major roadways, even where there are bike lanes, are fundamentally dangerous except for those few people (the Brave and the Fearless) who have the knowledge and skills to "ride in traffic". Few citizens can or do ride in traffic. However, improvements to the transportation system that match bicycle facility design, as described by the National Association of City Transportation Officials[123], to the skill and knowledge level of "all ages and abilities" will allow everyone to ride everywhere in safety; just as motorists can now do. The required improvements are beyond the scope of this paper but should be identified, funded, designed and constructed as a part of the City's upcoming update of its Transportation System Plan.

[123] National Association of City Transportation Officials, Designing for All Ages and Abilities, December 2017, https://nacto.org/wp-content/uploads/2017/12/NACTO_Designing-for-All-Ages-Abilities.pdf

Stepped-up traffic enforcement, broader use of neighborhood traffic calming measures, and improvements/construction of bicycle and pedestrian facilities have a cost. These costs are not considered in the estimated $100,000 price tag to lower maximum speeds consistent with the requirements of ORS 810.180.

Having addressed theses critical points, we now outline effects that can be reasonably expected to result from Ashland's adoption of 20mph system-wide speed limits:

1. Dramatic reductions in traffic collisions of all types are associated with 20mph speed limit systems. Fatal and KSI collisions exhibit especially large decreases. In addition to saving lives from premature death and debilitating injury, 20mph speed limits in Ashland would be associated with economic savings in the range of $0.76 million per year.

2. Traffic congestion levels would be expected to decrease in Ashland following adoption of 20mph speed limits as a consequence of modal substitution and improved utilization of roadway resources. Total annual VMT reductions in the range of 5% would be expected.

3. Vehicular travel times would be either slightly reduced or unaffected by implementation of 20mph speed limits.

4. Declines in VMT and increases in modal substitution result in system-wide fuel consumption decreases. The decline in motor fuel consumption would generate financial savings for Ashland residents of about $305,554 per year.

5. Traffic-related pollution is a function of the volume and speed of motorized vehicles. Important environmental benefits, including reduced CO_2, particulate matter, and noise pollution result from slower speeds and reduced VMT. The estimated benefit of CO_2 reductions, 1,070 metric tons, are worth $133,758.

6. Reductions in traffic speed and volume diminish road wear.

7. The cost of implementing 20mph speed limits in Ashland is low, estimated to be in the range of $100,000.

8. Public health levels increase as VMTs decline and modal substitution occurs, which would benefit all residents of Ashland and enhance efficiency of local health care.

9. A 20mph speed limit system is more socially equitable than a 25mph system, and 20mph speed limits would improve social equitability in Ashland.

Thank you for your consideration of this important transportation policy change.

ABOUT THE PRINCIPAL AUTHORS

Steve Porter

Steve is a recognized authority on economic analysis and valuation. He has provided expert testimony in high-stakes commercial litigation on topics including economics, valuation, statistics, econometrics, market definition, consumer choice, business strategy, and pricing, among others. He has consulted with Fortune 500 corporations on intellectual property licensing, asset transactions, and valuation issues, and he has conducted economic impact analyses, including work performed on behalf of the Los Angeles Superior Court. His articles have published in the *Journal of Legal Economics*, *les Nouvelles*, the *Patent, Trademark & Copyright Journal*, the *Journal of the Patent and Trademark Office Society*, and *Intellectual Asset Management*, among others. He also is co-author of *IP Strategy, Valuation, and Damages* (LexisNexis), a treatise on intellectual property economics. Steve has been an invited speaker before the Chicago Bar Association, the Attorney General's Office of the State of Arizona, and various law firms and corporations, where he has lectured on topics ranging from economic analysis and valuation to econometrics and game theory, and he has been quoted by and featured in the editorials section of the *Wall Street Journal*. Steve is a recipient of the William J. McKinstry Award in economics, the *Wall Street Journal* Scholar Award, the Micronomics Economic Research Award, and the IE Fund Leadership Scholar Award. He has served as a teaching assistant in economics at the Dolibois European Center in Luxembourg, an ad-hoc referee for the *Journal of Forensic Economics*, and as Co-Chair and an Executive Committee Member of Young Professionals Advisory Council at the Farmer School of Business. Steve graduated *summa cum laude* and with University Honors from Miami University in Oxford, Ohio, completing dual majors in economics and marketing. He was granted his MBA, with honors by the Dean and Board of Academic Affairs, from IE Business School in Madrid, Spain, graduating 5th in a class of more than 400. Steve holds the Series 65 securities license.

Michelle Porter

Michelle is an expert in valuation, economic analysis, and quantitative methods. She has been engaged by Fortune 500 companies, SMEs, U.S. and international government entities, and leading law firms to provide expertise in high-stakes commercial litigations, negotiations, and asset transactions. Her consulting work has encompassed advisory roles in industries including pharmaceuticals, medical devices, banking, telecommunications, consumer goods, software, and transportation technologies, among many others. Michelle is co-author of the book entitled *IP Strategy, Valuation, and Damages* (LexisNexis). Her articles have appeared in *les Nouvelles*, *Intellectual Asset Management*, *Intellectual Property Magazine*, *Smart Business*, *Los Angeles Daily Journal*, *The Recorder*, and *China Intellectual Property*, and she has been quoted by *Forbes*. Michelle has spoken before such groups as the Intellectual Property Law Committee of the Chicago Bar Association, Google, and Motorola Mobility. Her work has been recognized with the Accenture International Consulting Competition Top Honors Award, the IE Women Leaders Scholarship Award, the *les Nouvelles* Best Article Award, and the Micronomics Economic Research Award. In addition, Michelle has served as an advisor to the Forte Foundation's MBALaunch for Women, President of the IE Business School Southern California Alumni Association, Co-Chair and Executive Committee Member of Young Professionals Advisory Council at the

Farmer School of Business, and an instructor in microeconomics. Michelle graduated *cum laude* from Miami University in Oxford, Ohio, majoring in economics. She received her MBA from IE Business School in Madrid, Spain.

Memo

CITY OF ASHLAND

Date: January 14, 2021

From: Scott A. Fleury

To: Transportation Commission

RE: Capital Improvement Program-Roadway, Bicycle and Pedestrian Networks

BACKGROUND:

As per discussion at previous Commission meetings, staff has updated the "draft" version of the six-year Capital Improvement Program (CIP) document and it is attached for reference along with the fiscally constrained TSP project list.

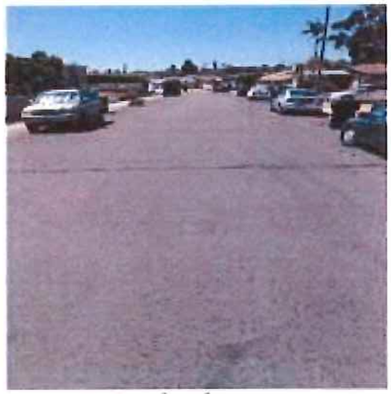
In addition, staff has provided background on revenue and expense line items from the previous budget for the street fund along with information regarding pavement condition index. The revenue and expense for personnel and materials and service to be proposed in the 2021-2023 biennium will be relatively similar to what is shown in this staff report for the 2019-2021 biennium budget. Pavement condition is a new performance metric Public Works would like to introduce into the budget document. Previous performance measures included preparation if lane miles for surface treatments, street sweeping requirements and defined percentage of road condition assessments completed annually.

Pavement Condition:

Pavement Condition Index (PCI) is a metric between 0 and 100 that indicates the general condition of the pavement condition. The index range is shown below. Public Works recommends establishing a minimum threshold of 70 related to the City's overall pavement condition index. When pavement sections have a rating of 70 or greater maintenance activities and associated costs have much less of an impact when compared to condition index

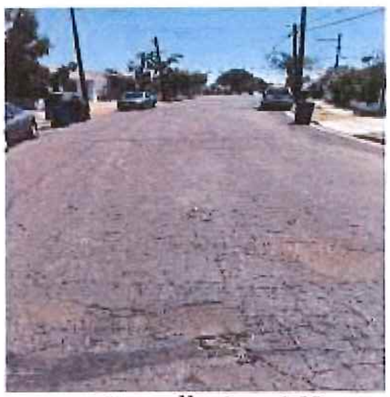
PCI range	Class
85-100	Good
70-85	Satisfactory
55-70	Fair
40-55	Poor
25-40	Very Poor
10-25	Serious
0-10	Failed

PCI 100



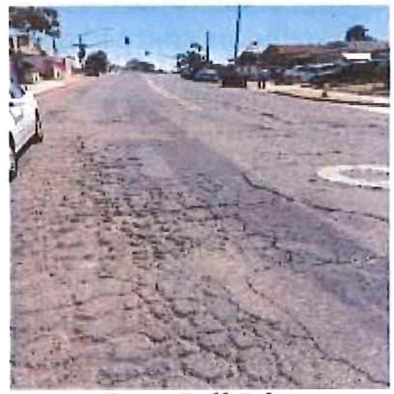
PCI 70

PCI 50

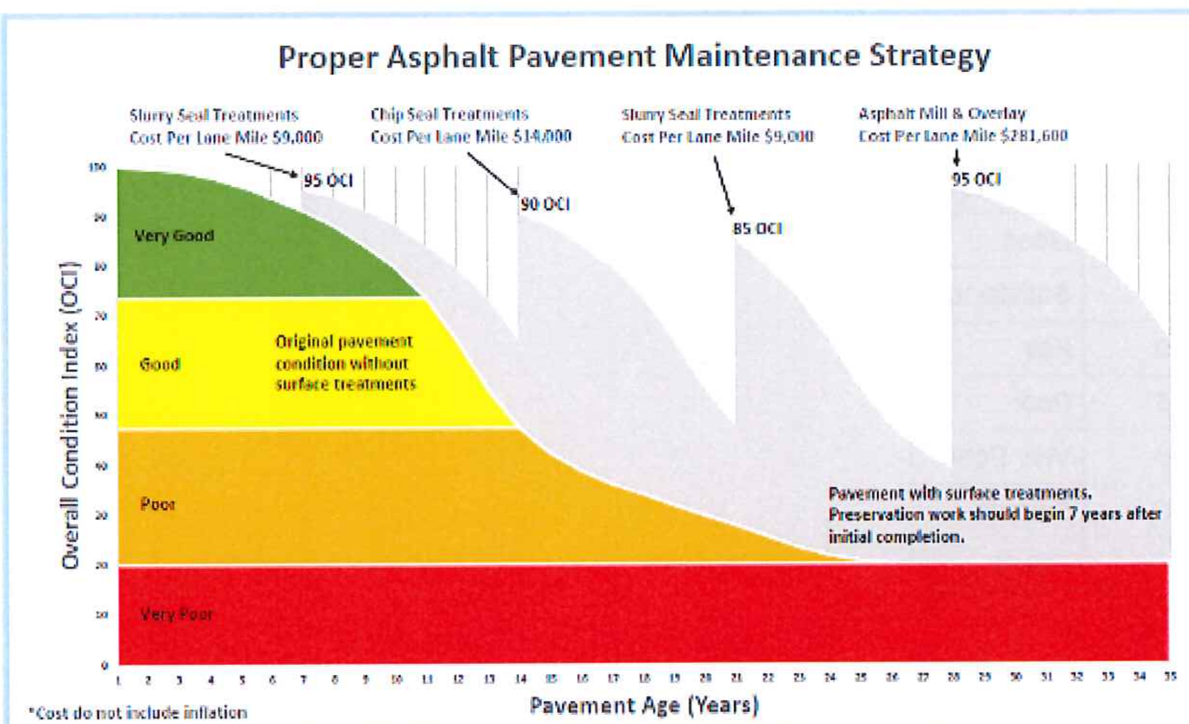


PCI 40

PCI 30



PCI 0



Revenue and Expense (2019-2021 Biennium Budget):

PW staff estimates associated revenue streams for the Street Fund. Shown below is a simplified version of the 2019-2021 Biennium Budget revenue vs. expense breakdowns. Staff is still working to finalize the proposed 2021-2023 Biennium totals and can share with the Commission at a future meeting in conjunction with rate adjustment recommendations. The street user fee and gas tax revenue streams primarily function to cover costs associated with personnel and materials and service portions of the budget. The food and beverage tax and grant funding are the two primary mechanisms to fund CIP projects with F&B being the primary source for roadway rehabilitation projects.

Street	FY20	FY21	Totals
Personnel	$ 975,007	$ 986,005	$ 1,961,012.00
Materials and Service	$ 2,138,628	$ 2,606,778	$ 4,745,406.00
Capital	TBD	TBD	$ -
Totals	**$ 3,113,635**	**$ 3,592,783**	**$ 6,706,418.00**

Street Revenues	FY20	FY21	Totals
Revenue (utility fee)	$ 1,611,059	$ 1,659,390	$ 3,270,449.00
Gas Tax	$ 1,554,000	$ 1,680,000	$ 3,234,000.00
F&B	$ 698,000	$ 740,000	$ 1,438,000.00
Grants	$ -	$ -	$ -

People & M/S Biennium totals
$ 6,706,418
Capital Biennium totals
$ -

Utility & Gas Tax totals*
$ 6,504,449
F&B Totals**
$ 1,438,000.00
Grant Totals
$ -

Combined Biennium Expense Totals	Revenue - Expense Totals
$ 6,706,418	$ 1,236,031

Combined Biennium Revenue Totals
$ 7,942,449

*Expect utility fee and gas tax revenues to be fairly similar in 2021-2023 Biennium

**Expect F&B revenue totals to increase to $1 to $1.5 million annually the 2021-2023 Biennium

Discussion Questions:

1. Does the Commission have a recommendation for changes/additions to the six year recommend CIP document for transportation related projects?
    a. High priority TSP fiscally constrained list
2. Does the Commission support and Pavement Condition Index (PCI) for the City's pavement to be set at 70 as a performance metric in the City's budget document?

CONCLUSION:

When the Commission is ready a formal recommendation as specified in the Ashland Municipal Code regarding recommendations to the Public Works Director on transportation projects for the Capital Improvement Program is warranted.

Attachment #1: CIP Spreadsheet "new six-year draft" FY22-26
Attachment #2: TSP Fiscally Constrained Improvement List

Previous Background:

Street Division:

The Street Fund has two components; operations and systems development charges (SDC) fund accountability. Division personnel are shared with the storm drain division; with the street division having a dedicated 6.85 FTE plus up to 8 temporary summer crew members (4 FTE). Division members maintain street and bike lane surfaces (sweeping, pothole corrections, crack seal, paving, ditch cleaning, signage and pavement markings), city sidewalks, railroad crossings and conduct debris and snow removal as required. Further, street division staff perform locates for both wastewater and storm drain infrastructure as well as ensure compliance with vegetation code. The division also funds and completes capital improvements (through the PW Support Division), funds the bus fare program, and signal maintenance (contracted to ODOT). Boulevard maintenance and downtown park row maintenance are coordinated with the Parks Department out of the ground's maintenance division.

Street Fund:

The Street Fund within the complete Public Works budget supports personnel, maintenance, internal charges, debt service and capital improvement costs. The Street Fund receives revenues through multiple sources that assist in its mission. Revenue streams include, local street user fee, cable tv franchise fee, Food & Beverage tax, State gas tax, Systems Development Charges (SDC) and any grant funding expected/obtained.

Current Budget Issues:

With the economic downturn associated with COVID19 the street fund has seen a decline in projected gas tax and F&B tax revenues for the first year of the budget biennium and this decline is expected in the second year. This has caused public works to reduce planned activities, not hire seasonal temporary employees and postpone the rehabilitation of Ashland Street and other capital projects until the next biennium.

2021-2023 Budget Biennium Preparation:

Specific to the transportation system CIP are roadway, bicycle and pedestrian network projects developed within the Transportation System Plan (TSP) document and other as needed or prioritized by public Works. A specific charge of the Commission per the Ashland Municipal Code (AMC) is to make recommendations on transportation funding for the CIP.

<u>AMC 2.13.030 (C)</u>

Funding: will make recommendations to the Public Works Director on the transportation section of the City's Capital Improvements Program;

Capital Improvements Plan
2021-2026 Construction Years

Project Description	PCI	Regulatory	Capacity	Deficiency	Life Cycle	FY21	FY22	FY23	FY24	FY25	FY26	Project Totals
Roadway						**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
City Wide Chip Seal Project (CMAQ)				X		$ 53,592						$ 53,592
Lithia Way (OR 99 NB)/E Main Street Intersection Improvements		X					$ 73,750					$ 73,750
Clay Street - 300-ft north of Takelma to Siskiyou Boulevard				X			$ 1,500,000	$ 3,035,814				$ 4,535,814
Grandview Drive Improvements - Phase II									$ 350,000			$ 350,000
Walker Avenue Festival Street (Siskiyou Boulevard to Ashland Street)										$ 200,000	$ 950,500	$ 1,150,500
Subtotal Roadway						**$ 53,592**	**$ 1,573,750**	**$ 3,035,814**	**$ 350,000**	**$ 200,000**	**$ 950,500**	**$ 6,163,656**
Street Overlays/Reconstructions	**PCI**					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
Ashland St - Siskiyou Blvd to Faith St	58.76			X	X	$ 500,000	$ 2,000,000					$ 2,500,000
N Mountain Ave - I-5 Overpass to E Main St	59.36			X	X		$ 1,000,000	$ 2,225,000				$ 3,225,000
Oak St - City Limits to E Main St	36.09			X	X				$ 1,500,000	$ 1,000,000		$ 2,500,000
Siskiyou Blvd - E Main St to Walker Ave	37.87			X	X					$ 3,500,000	$ 3,000,000	$ 6,500,000
Wightman St - Quincy St to Siskiyou Blvd	17.30			X	X						$ 1,400,000	$ 1,400,000
Maple St - Chestnut St to N Main St	32.36			X	X						$ 600,000	$ 600,000
Subtotal Street Improvements/Overlays						**$ 500,000**	**$ 3,000,000**	**$ 2,225,000**	**$ 1,500,000**	**$ 4,500,000**	**$ 5,000,000**	**$ 16,725,000**
Sidewalk/Pedestrian						**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
N Main Street RRFB Installation - Nursey Street & Van Ness Avenue				X			$ 75,000					$ 75,000
N Main Street/Highway 99 - N Main Street to Schofield Street			X	X				$ 73,750				$ 73,750
Beaver Slide - Water Street to Lithia Way			X	X				$ 73,750				$ 73,750
Diane Street - Clay Street to Tolman Creek Road			X	X				$ 29,500				$ 29,500
Walker Avenue - Oregon Street to Woodland Drive			X	X					$ 295,000			$ 295,000
Tolman Creek Road - Siskiyou Boulevard to City Limits (west side)			X	X						$ 226,875	$ 400,000	$ 626,875
A Street - Oak Street to 100' west of 6th Street			X	X						$ 140,000	$ 228,750	$ 368,750
Garfield Street - E Main Street to Siskiyou Boulevard			X	X						$ 135,000	$ 971,250	$ 1,106,250
Subtotal Sidewalk/Pedestrian						**$ -**	**$ 75,000**	**$ 177,000**	**$ 295,000**	**$ 501,875**	**$ 1,600,000**	**$ 2,648,875**
Bicycle						**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
Main Street Bicycle Boulevard - From Helman Street to Siskiyou Boulevard			X	X			$ 67,850					$ 67,850
Walker Avenue Bicycle Boulevard - From Siskiyou Boulevard to Peachey Road			X	X			$ 54,280					$ 54,280
Lithia Way Bicycle Boulevard – From Oak Street to Helman Street			X	X				$ 149,270				$ 149,270
8th Street Bicycle Boulevard - A Street to E Main Street			X	X				$ 27,140				$ 27,140
Oregon/Clark Street Bicycle Boulevard - Indiana Street to Harmony Lane			X	X				$ 54,280				$ 54,280
Maple/Scenic Drive/Nutley Street Bicycle Boulevard - From N Main Street to Winburn Way			X	X					$ 149,270			$ 149,270
Wightman Street Bicycle Boulevard – E Main Street to Siskiyou Boulevard			X	X						$ 81,420		$ 81,420
Normal Avenue Bike Lane - From E Main Street to Siskiyou Boulevard. Coordinate with Project R19			X	X						$ 257,830		$ 257,830
N Main Street Bike Lane - From Jackson Road to Helman Street			X	X							$ 352,820	$ 352,820
Subtotal Bicycle						**$ -**	**$ 122,130**	**$ 230,690**	**$ 149,270**	**$ 339,250**	**$ 352,820**	**$ 1,194,160**
TRANSPORTATION / LID						**$ 553,592**	**$ 4,770,880**	**$ 5,668,504**	**$ 2,294,270**	**$ 5,541,125**	**$ 7,903,320**	**$ 26,731,691**

Water - Supply Improvements					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
Dam Safety Improvements	X		X		$ 607,010	$ 2,000,000	$ 2,000,000				$ 4,607,010
TID Canal Piping: Starlite to Terrace Street				X			$ 1,500,000	$ 1,500,000			$ 3,000,000
East & West Fork Transmission Line Rehabilitation			X	X	$ 1,700,000	$ 300,000					$ 2,000,000
Reeder Reservoir Sediment Removal		X					$ 140,000			$ 140,000	$ 280,000
7.5 MGD Water Treatment Plant			X	X		$ 2,700,000	$ 15,400,000	$ 22,600,000			$ 40,700,000
Subtotal Water Supply					**$ 2,307,010**	**$ 5,000,000**	**$ 19,040,000**	**$ 24,100,000**	**$ -**	**$ 140,000**	**$ 50,587,010**
Water - Pump Station Improvements					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
TAP BPS Backup Power		X	X			$ 60,000	$ 350,000				$ 410,000
Hillview BPS Replacement				X						$ 375,000	$ 375,000
Subtotal Water Distribution					**$ -**	**$ 60,000**	**$ 350,000**	**$ -**	**$ -**	**$ 375,000**	**$ 785,000**
Water - Pipe Improvements					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
Ivy/Morton Waterline Replacement					$ 530,000						$ 530,000
Annual Pipe Replacement	X	X	X	X	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,800,000
Distribution Pipe Projects	X	X	X	X	$ 998,000	$ 194,000	$ 100,000	$ 467,000	$ 507,000	$ 1,418,000	$ 3,684,000
Transmission Pipe Projects	X	X	X	X				$ 117,000	$ 467,000		$ 584,000
Subtotal Water Distribution					**$ 1,828,000**	**$ 494,000**	**$ 400,000**	**$ 884,000**	**$ 1,274,000**	**$ 1,718,000**	**$ 6,598,000**
Water - Operations & Maintenance					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
Hydrant Replacement Program				X		$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 400,000
Telemetry Upgrades				X				$ 80,000			$ 80,000
Subtotal Water Distribution					**$ -**	**$ 80,000**	**$ 80,000**	**$ 160,000**	**$ 80,000**	**$ 80,000**	**$ 480,000**
WATER					**$ 4,135,010**	**$ 5,634,000**	**$ 19,870,000**	**$ 25,144,000**	**$ 1,354,000**	**$ 2,313,000**	**$ 58,450,010**
TAP - Booster Pump Station Improvements					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
Regional BPS Programming Updates			X							$ 11,667	$ 11,667
Regional BPS Short-Term Expansion		X	X			$ 25,000					$ 25,000
Subtotal Water Distribution					**$ -**	**$ 25,000**	**$ -**	**$ -**	**$ -**	**$ 11,667**	**$ 36,667**
TAP - Pipe Improvements					**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**Project Totals**
ODOT Bridge Pipe Relocation (Coleman Creek in Phoenix)					$ 58,170						$ 58,170
Subtotal Water Distribution					**$ 58,170**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 58,170**
WATER/TAP					**$ 58,170**	**$ 25,000**	**$ -**	**$ -**	**$ -**	**$ 11,667**	**$ 94,837**

Wastewater Treatment Plant					FY21	FY22	FY23	FY24	FY25	FY26	Project Totals
UV System Upgrades	X	X	X	X	$ 150,000	$ 1,400,000					$ 1,550,000
Shading (Capital Cost + first 6 years of O&M)	X				$ 600,000	$ 660,000	$ 380,000	$ 420,000	$ 200,000	$ 45,000	$ 2,305,000
Outfall Relocation / Fish Screen	X				$ 100,000	$ 1,440,000					$ 1,540,000
WWTP Process Improvements (Headworks)			X	X		$ 2,200,000	$ 1,000,000	$ 560,000			$ 3,760,000
WWTP Process Improvements (Harmonics)			X				$ 110,000				$ 110,000
Secondary Clarifier 2 Improvements			X	X			$ 397,500	$ 397,500			$ 795,000
Biosolids Treatment Improvements									$ 250,000		$ 250,000
WWTP Process Improvements (Miscellaneous)	X	X	X	X	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000		$ 750,000
Membrane Replacement (two trains)				X				$ 600,000	$ 600,000		$ 1,200,000
Oxidation Ditch Shell	X	X								$ 3,000,000	$ 3,000,000
		Subtotal Treatment Plant			$ 1,000,000	$ 5,850,000	$ 2,037,500	$ 2,127,500	$ 1,200,000	$ 3,045,000	$ 15,260,000

Wastewater Collection System					FY21	FY22	FY23	FY24	FY25	FY26	Project Totals
Wastewater Miscellaneous In-House Replacement		X	X	X	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 750,000
Wastewater Miscellaneous Trenchless Pipe Lining			X	X	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 750,000
Wastewater Line Upsizing - 18" & 24" Parallel Trunkline - Wightman to Tolman Creek Road		X		X		$ 712,000	$ 712,000				$ 1,424,000
Maple St - Chestnut St to Scenic Dr								$ 44,000			$ 44,000
Tolman Creek Rd - Abbott Ave to Ashland St								$ 92,000			$ 92,000
A St - First St to Eighth St									$ 446,000		$ 446,000
Garfield St - E Main St to Quincy St									$ 59,000		$ 59,000
Granite St - Baum St to Nutley St, Strawberry Ln to Pioneer St, N of Ashland Creek Dr										$ 216,000	$ 216,000
		Subtotal Collection System			$ 250,000	$ 962,000	$ 962,000	$ 386,000	$ 755,000	$ 466,000	$ 3,781,000
WASTEWATER					$ 1,250,000	$ 6,812,000	$ 2,999,500	$ 2,513,500	$ 1,955,000	$ 3,511,000	$ 19,041,000

Storm Drain					FY21	FY22	FY23	FY24	FY25	FY26	Project Totals
Cemetery Creek Basin Stormwater Quality Improvement (hydrodynamic separator)					$ 9,940						$ 9,940
Gresham Street @ Beach Avenue		X						$ 391,000			$ 391,000
Dewey Street @ E Main St		X					$ 247,000				$ 247,000
Siskiyou Boulevard @ University Way		X			$ 129,000						$ 129,000
Morton Street - Pennsylvania Street to Iowa Street		X							$ 217,000	$ 217,000	$ 434,000
E Main Street @ Emerick Street						$ 235,000					$ 235,000
N Mountain Avenue @ Railroad Tracks								$ 188,000			$ 188,000
Maple Street @ Chestnut Street										$ 70,000	$ 70,000
STORM DRAIN					$ 138,940	$ 235,000	$ 247,000	$ 579,000	$ 217,000	$ 287,000	$ 1,703,940

the sole jurisdiction of the City of Ashland as well as projects that would require the City's financial participation in joint projects with ODOT, Jackson County, and RVTD. The City will coordinate with other agencies to leverage funding opportunities and therefore the projects in the "Financially Constrained Project List" should be looked at as an illustration of the City's current funding priorities but one that will change over time.

Table 14-3 presents a list of programs, studies, and projects organized by modal plan that can be considered reasonably likely to have funding over the next 25 years at the current time. *As noted in the Preferred Plan Summary section, all Preferred Plan policies presented above will be carried through to the TSP pending revisions based on comments received from TAC, PC, and TC members.* Only projects with anticipated costs are included in Table 14-3.

As noted above, the list in Table 14-3 will change over time. Potential additional funding sources that the City could consider to increase future transportation revenues are included in the Funding Programs White Paper.

Table 14-3 Financially Constrained Programs, Studies and Projects List

(ID #) Name	Description	Reasons for the Program, Study or Project	Cost
High Priority Programs, Studies, and Projects			
General Studies			
(S2) Downtown Parking and Multi-Modal Circulation Study Management Plan Study	See study description on pages 90-91.	Facilitate Economic Growth, Balance Mobility and Access	$100,000
Active Transportation Plan Programs and Projects			
(O1) TravelSmart Education Program	Invest in individualized, targeted marketing materials to be distributed to interested individuals for the purpose of informing and encouraging travel as a pedestrian or by bicycle	Encourage and facilitate travel as a pedestrian and/or bicyclist Part of creating a green transportation template	$45,000
(O4) Retrofit Bicycle Program	Establish funds and process for installing off-street bicycle racks at existing business/establishments	Facilitate bicycle travel Part of creating a green transportation template	$50,000
(P1) N Main Street/Highway 99	From N Main Street to Schofield Street	Fill gap in existing sidewalk network	$50,000
(P5) Glenn Street/ Orange Avenue	From N Main Street to 175' east of Willow Street	Fill gap in existing sidewalk network	$200,000
(P6) Orange Avenue	175' west of Drager Street to Helman Street	Fill gap in existing sidewalk network	$250,000
(P7) Hersey Street	From N Main Street to Oak Street	Fill gap in existing sidewalk network	$750,000
(P9) Maple Street	From Chestnut Street to 150' east of Rock Street	Fill gap in existing sidewalk network	$100,000
(P10) Scenic Drive	From Maple Street to Wimer Street	Fill gap in existing sidewalk network	$250,000
(P17) Beaver Slide	From Water Street to Lithia Way	Fill gap in existing sidewalk network	$50,000
(P18) A Street	From Oak Street to 100' west of 6th Street	Fill gap in existing sidewalk network	$250,000

(ID #) Name	Description	Reasons for the Program, Study or Project	Cost
(P22) Mountain Avenue	From 100' south of Village Green Way to Iowa Street	Fill gap in existing sidewalk network	$450,000
(P23) Wightman Street	From 200' north of E Main Street to 625' south of E Main Street	Fill gap in existing sidewalk network	$400,000
(P25) Walker Avenue	950' north of Iowa Street to Ashland Street	Fill gap in existing sidewalk network	$750,000
(P27) Walker Avenue	From Oregon Street to Woodland Drive	Fill gap in existing sidewalk network	$200,000
(P28) Ashland Street	From S Mountain Avenue to Morton Street	Fill gap in existing sidewalk network	$450,000
(P38) Clay Street	From Siskiyou Boulevard to Mohawk Street	Fill gap in existing sidewalk network	$300,000
(P57) Tolman Creek Road	From Siskiyou Boulevard to City Limits (west side)	Fill gap in existing sidewalk network	$425,000
(P58) Helman Street	From Hersey Street to Van Ness Avenue	Fill gap in existing sidewalk network	$100,000
(P59) Garfield Street	From E Main Street to Siskiyou Boulevard	Fill gap in existing sidewalk network	$750,000
(P60) Lincoln Street	From E Main Street to Iowa Street	Fill gap in existing sidewalk network	$450,000
(P61) California Street	From E Main Street to Iowa Street	Fill gap in existing sidewalk network	$500,000
(P63) Liberty Street	From Siskiyou Boulevard to Ashland Street	Fill gap in existing sidewalk network	$650,000
(P65) Faith Avenue	From Ashland Street to Siskiyou Boulevard	Fill gap in existing sidewalk network	$350,000
(P66) Diane Street	From Jaquelyn Street to Tolman Creek Road	Fill gap in existing sidewalk network	$20,000
(P67) Frances Lane	From Siskiyou Boulevard to Oregon Street	Fill gap in existing sidewalk network	$10,000
(P68) Carol Street	From Patterson Street to Hersey Street	Fill gap in existing sidewalk network	$150,000
(P70) Park Street	From Ashland Street to Siskiyou Boulevard	Fill gap in existing sidewalk network	$650,000
(B2) Wimer Street	Bicycle Boulevard - From Scenic Drive to N Main Street.	Upgrade of existing bikeway to encourage greater use	$20,000
(B5) Maple/Scenic Drive/Nutley Street	Bicycle Boulevard - From N Main Street to Winburn Way	Fill gap in existing bicycle network	$110,000
(B7) Iowa Street	Bike Lane - From Terrace Street to road terminus and from N Mountain Avenue to Walker Avenue	Fill gap in existing bicycle network	$240,000
(B10) S Mountain Avenue	Bike Lane - From Ashland Street to E Main Street	Fill gap in existing bicycle network	$120,000
(B11) Wightman Street	Bicycle Boulevard – E Main Street to Siskiyou Boulevard	Fill gap in existing bicycle network	$60,000
(B13) B Street	Bicycle Boulevard - From Oak Street to N Mountain Avenue	Fill gap in existing bicycle network	$80,000
(B16) Lithia Way	Bicycle Boulevard – From Oak Street to Helman Street	Fill gap in existing bicycle network	$110,000
(B17) Main Street	Bicycle Boulevard - From Helman Street to Siskiyou Boulevard.	Fill gap in existing bicycle network	$50,000
(B19) Helman Street	Bicycle Boulevard - From Nevada Street to N Main Street	Fill gap in existing bicycle network	$80,000

(ID #) Name	Description	Reasons for the Program, Study or Project	Cost
(B26) Normal Avenue	Bike Lane - From E Main Street to Siskiyou Boulevard. Coordinate with Project R19.	Fill gap in existing bicycle network	$190,000
(B29) Walker Avenue	Bicycle Boulevard - From Siskiyou Boulevard to Peachey Road	Fill gap in existing bicycle network	$40,000
(B31) Indiana Street	Bicycle Boulevard - Siskiyou Boulevard to Oregon Street	Fill gap in existing bicycle network	$20,000
(B33) 8th Street	Bicycle Boulevard - A Street to E Main Street	Fill gap in existing bicycle network	$20,000
(B38) Oregon/Clark Street	Bicycle Boulevard - Indiana Street to Harmony Lane	Fill gap in existing bicycle network	$40,000
(TR1) North Side Trail	Multi-use Path – From Orchid Avenue to Tolman Creek Road	Expand existing bicycle network	$2,000,000
Transit Plan Program			
(O5) Transit Service Program	Provides funds and guidance on how to allocate funds to improve transit service in Ashland	Improve transit service to increase ridership Part of creating a green template, supporting economic prosperity, and creating system-wide balance	$1,000,000
Intersection and Roadway Plan Studies and Projects			
(S10) Siskiyou Boulevard Pedestrian Crossing Evaluation and Feasibility Study	Evaluate pedestrian flows, crossing demand, and safety along Siskiyou Boulevard from Highway 66 to Beach Street. The study should evaluate the adequacy of the planned pedestrian improvements along Siskiyou Boulevard (the rectangular rapid-flash beacons at crosswalks and diagonal crossing at the Indiana-Wightman intersection) once the new dormitory and dining hall are operational for existing and future forecast pedestrian demand. The need, ideal location, feasibility and cost of a grade-separated crossing should be evaluated. This project is a joint project with the city and SOU; not subject to development..	Improve Safety	$35,000
(R5) Siskiyou Boulevard (OR 99)-Lithia Way (OR 99 NB)/E Main Street Intersection Improvements	Improve visibility of signal heads. Identify and install treatments to slow vehicles on northbound approach	Improve Safety	$50,000
(R6) Siskiyou Boulevard (OR 99)/Tolman Creek Road Intersection Improvements	Conduct a speed study. Identify and install speed reduction treatments on northbound approach	Improve Safety	$61,000
(R8) Ashland Street (OR 66)/Oak Knoll Drive-E Main Street Intersection Improvements	Realign E Main Street approach to eliminate offset and install speed reduction treatments	Improve Safety	$706,000
(R17) East Nevada Street Extension	Extend Nevada Street from Bear Creek to Kestrel Parkway	Balance Mobility and Access	$2,261,000
(R25) Washington Street Extension to Tolman Creek Road	Extend Washington Street to Tolman Creek Road consistent with the IAMP Exit 14 Access	Facilitate Economic Growth Balance Mobility and Access	$1,055,000

(ID #) Name	Description	Reasons for the Program, Study or Project	Cost
	Management on Ashland Street (OR 66). This is a City funded project; not developer driven.		
(R35) N Main Street Temporary Road Diet	Implement a temporary road diet on N Main Street. Temporary road diet includes converting N Main Street to a two-lane roadway with a two-way center turn lane and bicycle lanes in both directions	Improve Safety, Balance Mobility and Access, Creating Space for Bikes	$160,000
(R40) Walker Avenue Festival Street (Siskiyou Boulevard to Ashland Street)	Street reconstruction with flush curbs and scored concrete roadway surface. Sidewalk treatments to include decorative bollards to delineated pedestrian space, street trees, LID storm water facilities and ornamental lighting.	Support Pedestrian Places Planning	$780,000
High Priority Sub Total			**$17,988,000**
Medium Priority Programs, Studies, and Projects			
General Studies			
(S1) Funding Sources Feasibility Study	Study to identify and evaluate the feasibility of additional funding sources to support transportation programs, studies, and projects.	Enable the City to Implement more Programs, Studies, and Projects to Achieve Goals	$30,000
Active Transportation Plan Projects			
(P4) Laurel Street	From Nevada Street to Orange Avenue	Fill gap in existing sidewalk network	$500,000
(P8) Wimer Street	From Thornton Way to N Main Street	Fill gap in existing sidewalk network	$800,000
(P37) Clay Street	From Faith Avenue to Siskiyou Boulevard	Fill gap in existing sidewalk network	$1,000,000
(P62) Quincy Street	From Garfield Street to Wightman Street	Fill gap in existing sidewalk network	$150,000
(P64) Water Street	From Van Ness Avenue to B Street	Fill gap in existing sidewalk network	$250,000
(P72) C Street	From Fourth Street to Fifth Street	Fill gap in existing sidewalk network	$100,000
(P73) Barbara Street	From Jaquelyn Street to Tolman Creek Road	Fill gap in existing sidewalk network	$100,000
(P74) Roca Street	From Ashland Street to Prospect Street	Fill gap in existing sidewalk network	$250,000
(P75) Blaine Street	From Morton Street to Morse Avenue	Fill gap in existing sidewalk network	$100,000
(P78) Patterson Street	From Crispin Street to Carol Street	Fill gap in existing sidewalk network	$100,000
(P79) Harrison Street	From Iowa Street to Holly Street	Fill gap in existing sidewalk network	$100,000
(P80) Spring Creek Drive	From Oak Knoll Drive to road end	Fill gap in existing sidewalk network	$350,000
(P81) Bellview Avenue	From Greenmeadows Way to Siskiyou Boulevard	Fill gap in existing sidewalk network	$250,000
(B3) Nevada Street	Bike Lane - From Vansant Street to N Mountain Avenue. Coordinate with Project R17.	Fill gap in existing bicycle network	$230,000

(ID #) Name	Description	Reasons for the Program, Study or Project	Cost
(B9) Ashland Street	Bicycle Boulevard - From Morton Street to University Way	Fill gap in existing bicycle network	$30,000
(B18) N Main Street	Bike Lane - From Jackson Road to Helman Street Included as part of Projects R35 and R36. See Table 10-2 for more details.	Fill gap in existing bicycle network	$260,000
(B20) Water Street	Bicycle Boulevard - From Hersey Street to N Main Street	Fill gap in existing bicycle network	$30,000
(B25) Tolman Creek Road	Bike Lane - From Siskiyou Boulevard to Green Meadows Way	Fill gap in existing bicycle network	$100,000
(B37) Clay Street	Bicycle Boulevard - From Siskiyou Boulevard to Mohawk	Fill gap in existing bicycle network	$20,000
(B39) Glenn/Orange Street	Bicycle Boulevard - from N Main Street to Proposed Trail	Fill gap in existing bicycle network	$40,000
(B40) Laurel Street	Bicycle Boulevard - From Orange Street to Nevada Street	Fill gap in existing bicycle network	$40,000
(TR2) New Trail	Multi-Use Path - From Clay Street to Tolman Creek Road	Fill gap in existing bicycle network	$400,000
Transit Plan Program			
(O5) Transit Service Program	Provides funds and guidance on how to allocate funds to improve transit service in Ashland	Improve transit service to increase ridership Part of creating a green template, supporting economic prosperity, and creating system-wide balance	$2,750,000
Heavy Rail Plan Programs and Projects			
Intersection and Roadway Plan Studies and Projects			
(S3) N Main Street (OR 99) from Helman Street to Sheridan Street	Conduct access management spacing study and provide near- and long-term recommendations for improvement.	Improve Safety	$75,000
(S5) Siskiyou Boulevard from Ashland Street to Tolman Creek Road	Conduct access management spacing study and provide near- and long-term recommendations for improvement.	Improve Safety	$75,000
(S6) Ashland Street (OR 66) from Siskiyou Boulevard to Tolman Creek Road	Conduct access management spacing study and provide near- and long-term recommendations for improvement.	Improve Safety	$75,000
(S9) Ashland Street (OR 66) Safety Study	Conduct a transportation safety assessment in five years along Ashland Street (OR 66) between Clay Street and Washington Street to identify crash trends and/or patterns as well as mitigations to reduce crashes.	Improve Safety	$20,000
(R19) Normal Avenue Extension	Extend Normal Avenue to E Main Street; Coordinate with Project X3	Balance Mobility and Access	$2,705,000
(R36) N Main Street Implement Permanent Road Diet	Convert temporary road diet to permanent installation, which includes, at a minimum, signal modifications to the N Main Street/Maple Street and the N Main Street/Laurel Street	Improve Safety, Balance Mobility and Access	$200,000

(ID #) Name	Description	Reasons for the Program, Study or Project	Cost
	intersections		
(R38) Ashland Street Streetscape Enhancements (Siskiyou Boulevard to Walker Avenue)	Widen and reconstruct sidewalks with street trees, storm water planters and bus shelters. Ashland Street/Walker Avenue intersection enhancements to include concrete crosswalks, paving, and ornamental lights.	Improve Safety, Balance Mobility and Access	$1,100,000
Medium Priority Sub-Total			**$12,230,000**
High + Medium Priority Total (Cost Constrained Plan)			**$30,218,000**

Scott Fleury

From: Scott Fleury
Sent: Tuesday, December 22, 2020 8:35 AM
To: Kat Smith
Cc: Shannon Burruss; Linda Peterson Adams
Subject: RE: FW: Question Asked and Answered!
Attachments: Faith Ave - Clay to Mae - 11-20_SpdGrand.pdf; Faith Ave - Mae to Wine - 11-20 _SpdGrand.pdf; Faith Ave-Clay to Mae_Traffic Count Map.pdf; Faith Ave-Mae to Wine_Traffic Count Map.pdf; Faith Avenue Traffic Calming Program Phase 1.doc

Kat,

I just wanted to follow up with you regarding the Traffic Calming Program request for Faith Avenue. We did collect the speed and volume data on Faith Street in two locations and were able to compare it to data collected in 2013. This information was presented to the Transportation Commission at the December 17th meeting. I have attached our data collection information for reference.

The overall speeds/volumes were lower than I expected. As of right now based on the speed/volume/crash data Faith Avenue only generates a cumulative score of 3 points and 8 are needed to move towards phase 2 remedies. The Commission wanted me to let you know that they are going to review the program and look at potential changes based on the data collected from a couple of neighborhoods that have gone through the phase 1 portion to date. They will be doing that review in 2021. Also the Transportation Commission and Climate Policy Commission are looking at the potential for a "20 is plenty" speed limit program for the City to be applied on low volume residential roadways either in total or on a specific basis. Current rules allow roadways to be signed at 20mph if they meet established speed/volume criteria and are marked appropriately. That process is currently underway and will hopefully be formally developed in 2021. I will try to keep you informed on the goings on so you can pass that information along to concerned parties on Faith Avenue.

Please let me know if you have any questions.

Thanks,

Scott A. Fleury, P.E. Public Works Director
City of Ashland, Public Works
20 East Main Street, Ashland OR 97520
(541) 552-2412, TTY 800-735-2900
Fax: (541) 488-6006

From: Kat Smith <ladybikesafety@gmail.com>
Sent: Monday, November 02, 2020 1:37 PM
To: Scott Fleury <scott.fleury@ashland.or.us>
Cc: Shannon Burruss <shannon.burruss@ashland.or.us>
Subject: Re: FW: Question Asked and Answered!

[EXTERNAL SENDER]

Wonderful!

Thank you both so much:).

Best,

Kat

On Mon, Nov 2, 2020 at 11:22 AM Scott Fleury <scott.fleury@ashland.or.us> wrote:

> Kat,
>
> This is just to let you know we have received the petition and the City will begin the data collection process outlined in the Traffic Calming program when we can in order to bring the information forward to the Transportation Commission.
>
> Hope you and family are doing well.
>
> I will let you know when we get to the next steps.
>
> Thanks,
>
> Scott A. Fleury, P.E. Public Works Director
>
> City of Ashland, Public Works
>
> 20 East Main Street, Ashland OR 97520
>
> (541) 552-2412, TTY 800-735-2900
>
> Fax: (541) 488-6006
>
>

From: Shannon Burruss <shannon.burruss@ashland.or.us>
Sent: Monday, November 02, 2020 11:19 AM
To: Scott Fleury <scott.fleury@ashland.or.us>
Subject: FW: FW: Question Asked and Answered!

Hey! I've never gotten one of these before, do I just get it to you, and/or shall I distribute it to the Commission?

From: Kat Smith <ladybikesafety@gmail.com>
Sent: Monday, November 02, 2020 9:05 AM
To: Shannon Burruss <shannon.burruss@ashland.or.us>
Subject: Re: FW: Question Asked and Answered!

[EXTERNAL SENDER]

Shannon -

I hope this finds you well.

My neighbors and I would like to initiate a neighborhood traffic calming program.

I've attached copies of the petition. If you need/want the hard copies please let me know where to send them.

Please let me know if you're the person to send it to and/or if there's anything else you need from us.

Many thanks,

Kat Smith

541.326.7517

770 Faith Ave, Ashland, OR 97520

On Sat, Jul 11, 2020 at 5:15 PM Kat Smith <ladybikesafety@gmail.com> wrote:

Thank you Shannon!

On Fri, Jul 10, 2020 at 2:39 PM Shannon Burruss <shannon.burruss@ashland.or.us> wrote:

Hi Kat;

I spoke with Scott, you can go ahead and submit the same permit as before (attached), but without the requirement for signature. So, hooray! 😊

Shannon Burruss

Permit Technician

City of Ashland, Public Works Department

51 Winburn Way, Ashland, OR 97520

541-552-2428

Fax: 541-488-6006, TTY: 1-800-735-2900

--

Kat

"Forget your perfect offering / there is a crack in everything / that's how the light gets in." ~ Leonard Cohen

--

Kat Smith, LCSW

she/her/hers

541.326.7517

"Forget your perfect offering / there is a crack in everything / that's how the light gets in." ~ Leonard Cohen

--
Kat Smith, LCSW
she/her/hers
541.326.7517

"Forget your perfect offering / there is a crack in everything / that's how the light gets in." ~ Leonard Cohen

CITY OF ASHLAND

Transportation Commission
Action Item List

January 21, 2021

Action Items:

1. Capital Improvement Plan-Review and Recommendation (2020/21)
   - ***Review proposed roadway, pedestrian and bicycle network CIP projects for the 2021-2023 budget biennium***
   - ***Make recommendation on priorities for 2 and 6-year CIP projects***
2. TSP Update (2020-21)
   - Solicitation documents have been submitted and scored by project team
   - Scope, schedule and fee documents under review (TC December 2019/January 2020/February 2020)
   - Professional services contract requires Council approval
   - Schedule Council approval (April 7, 2020)
   - ***TSP Postponed until timing to start project is more appropriate***
3. Main St. Crosswalk truck parking **(no change)**
   - Analysis is included in the revitalize downtown Ashland plan and was recently discussed during the kickoff meeting.
   - The Revitalize Downtown Ashland Transportation Growth and Management grant project has begun that will assess safety and parking in the downtown core. (February 2020) No change-March 2020
   - ***The Revitalize Downtown Ashland Project has been cancelled with the expectation to re-start the project at a more appropriate time in the future (1-2 years).***
4. Siskiyou Blvd. and Tolman Creek Intersection Improvements
   - The Oregon Department of Transportation removed median island and restriped Tolman Creek portion of intersection to allow for better right hand turning truck movements.

- The Oregon Department of Transportation is also looking at curb ramp design changes to the intersection. (February 2020) No change-March 2020
- Reference ODOT Intersection Change Schematic Drawing (September 2020)
- ***Forwarded TC comments to ODOT regarding review of 60% Design (September 2020)***

5. 20 is Plenty Subcommittee Work (**November 2021 start**)
   - Mark Brouillard is participating in the 20 mph is plenty subcommittee work with the Climate Policy Commission representatives.
6. Railroad District Parking Limitations Review
   - At a future meeting TBD, discuss current parking limitations in railroad district.