



RESILIENCE & REINVENTION
*Overcoming challenges and breaking
through innovation and creativity.*

An Innovative Approach to Gravel Roads

Topics of Discussion

1. Telling our story

- History
- Executive Support
- Success

2. Innovations

- Methodologies
- Materials Approach
- Outreach and Public Involvement

3. Next Steps

- Future of maintenance
- Impact fees
- Roadway upgrades

Presented by:

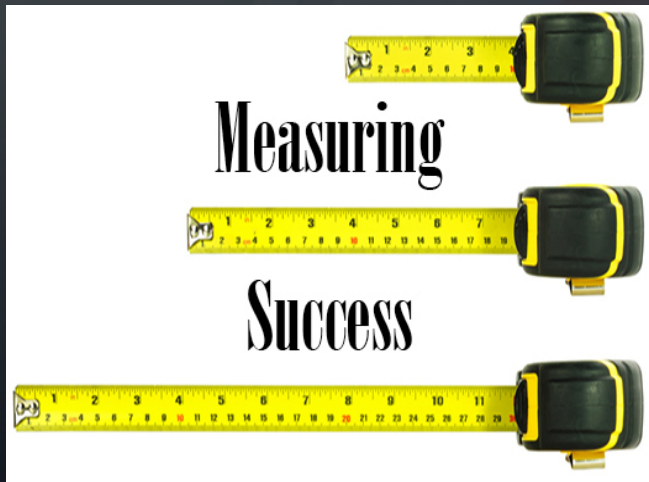
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Telling our Story





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Telling Our Story - History

TYPICAL GRAVEL ROAD CHALLENGES



Flooding / Washout



Mud / Rutting



Potholing



Erosion



Dusting



Corrugation / washboard



Culvert



Drainage Crossing



Weeds





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Telling Our Story - History



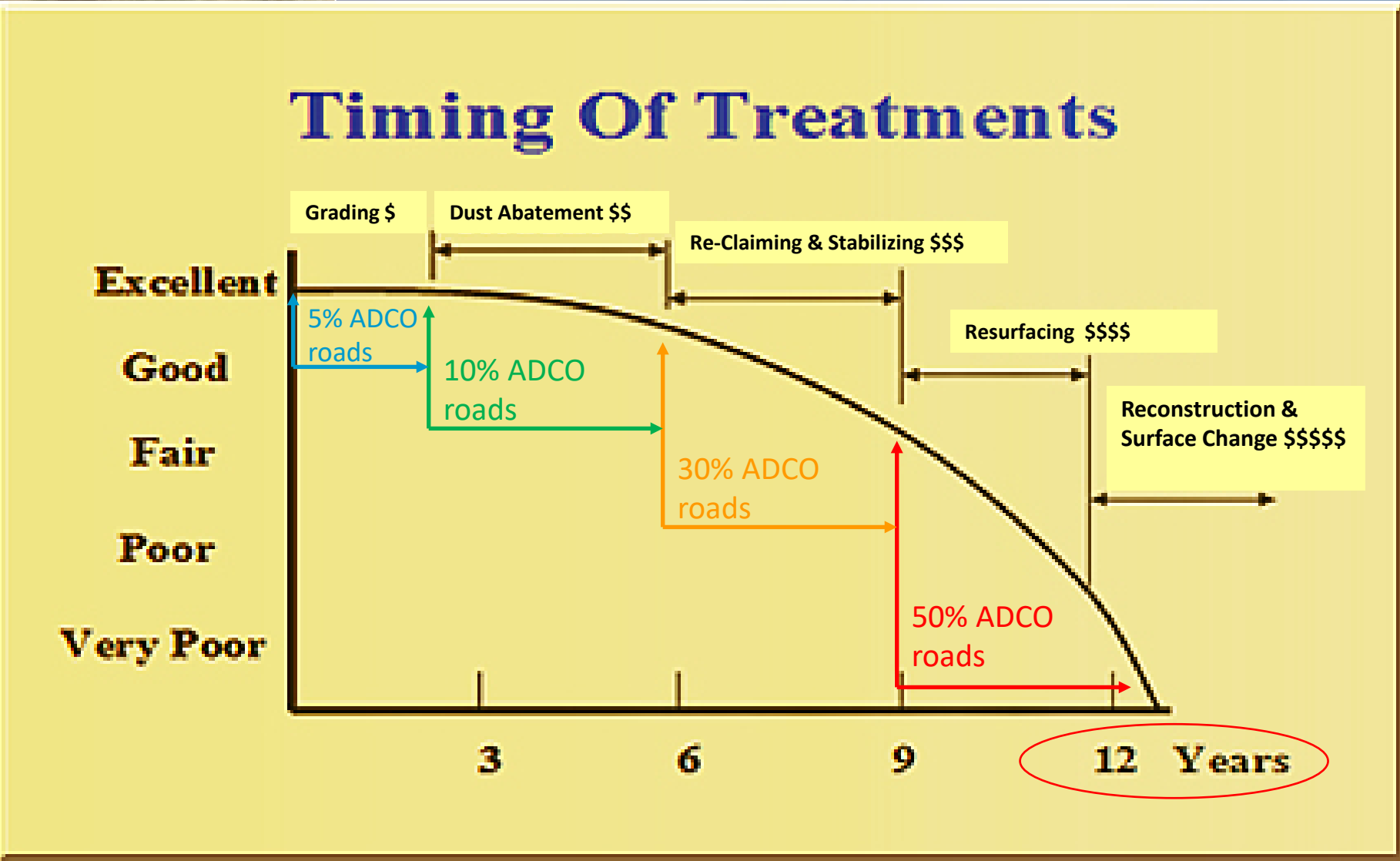
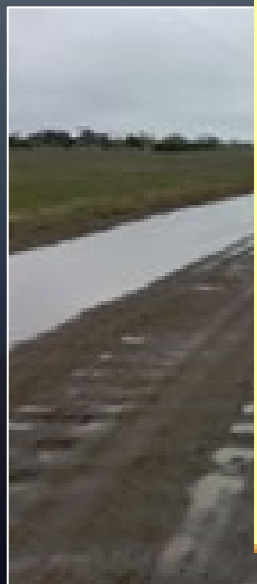
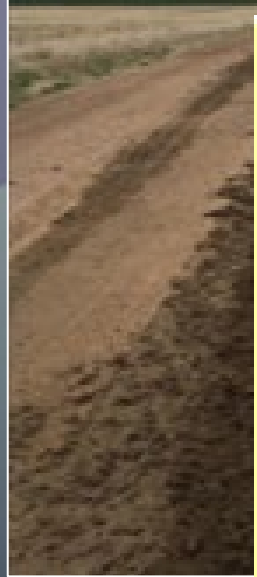
2016

The Adams County gravel road network reached a critical point for public safety:

- ✓ Gravel road conditions pose a safety risk to motorists and emergency service providers
- ✓ Gravel road conditions are negatively impacting economic vitality in Eastern Adams County
- ✓ Routine maintenance schedule is not able to keep roads passable
- ✓ Time on repairs are significantly impacting other program and maintenance responsibilities
- ✓ Resident request/complaints are intensifying averaging 50 -100 after each rain or snow storm



Telling Our Story - History



ravel

aced



Telling Our Story - History



Areas of Concern for the Team

- Employee Pride in their Work
- Employee Resources & Accommodations
- Attracting and Retaining Talent
- Effective & Efficient Service Delivery





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Telling Our Story – Executive Support

Leadership Support Made the Impossible—Possible!

VISION

Adams County is the most **INNOVATIVE** and **INCLUSIVE** county in America for all families and businesses.

MISSION

To responsibly serve the Adams County community with **INTEGRITY** and **INNOVATION**.



CULTURAL NORMS & VALUES

- | | |
|-------------------------|-----------------------------|
| Support & Encourage | A Positive Work Environment |
| Demonstrate Respect | Servant Leadership |
| Exhibit Fairness | Teamwork |
| Communicate Effectively | Transparency |
| Be Trustworthy | Credibility |
| | Excellence |



5 COMMISSIONERS' GOALS

- Education and Economic Vitality
- High Performing, Fiscally Sustainable Government
- Quality of Life
- Safe, Reliable Infrastructure
- Community Enrichment



Telling Our Story – Executive Support



2014

Assessment

- Inventory of Network
- Updated HUTF
- Organized Maintenance Program
- Benchmarked Service Delivery

2015

Defining the Problem

Developed Strategic Plan



2016

Developing the Solution

- Securing Program Budget
- Onboarding/Training new FTEs
- Materials/Solutions Testing



Telling Our Story – Executive Support



EACH AND EVERY ACCOMPLISHMENT STARTS WITH A DECISION TO TRY

2017 Expanding

Expanded program based on staff capacity
Developed the program to meet the changing needs of the network

2018 Discovering

Learning the limits of our staff capacity
Identifying new challenges in scaling the program up

2019 Maintaining

Realizing positive impacts based on annual reporting
Overall network improvement

2020 Sustaining

Balancing roadway reconstruction with maintenance responsibilities





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Telling Our Story – Executive Support



- Employee Pride?
- Employee Resources & Accommodations?
- Attracting and Retaining Talent?
- Effective & Efficient Service Delivery?





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Telling Our Story – Success

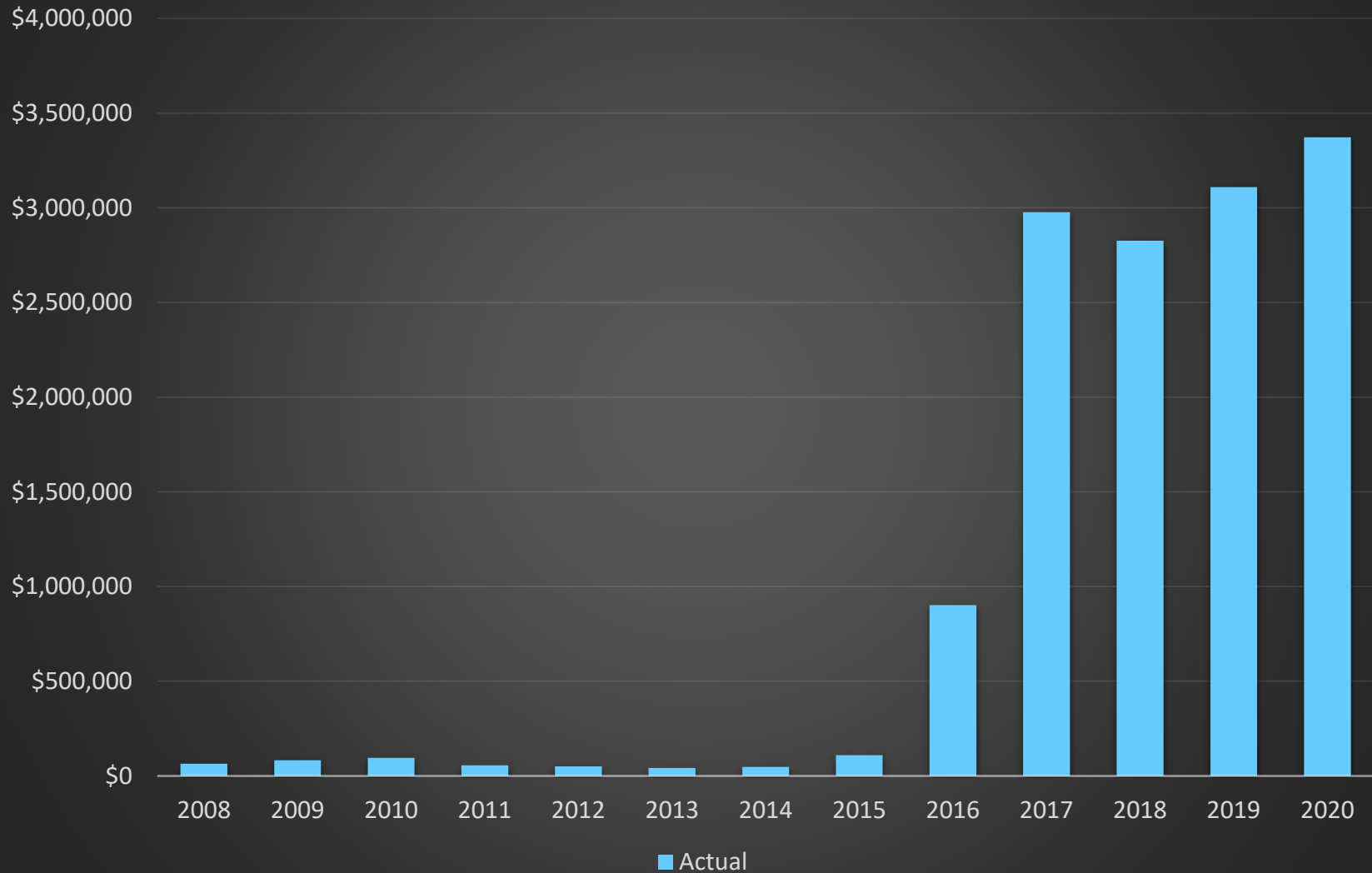




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Telling Our Story – Success

Actual Expenditure Trend (Hard Cost Only)

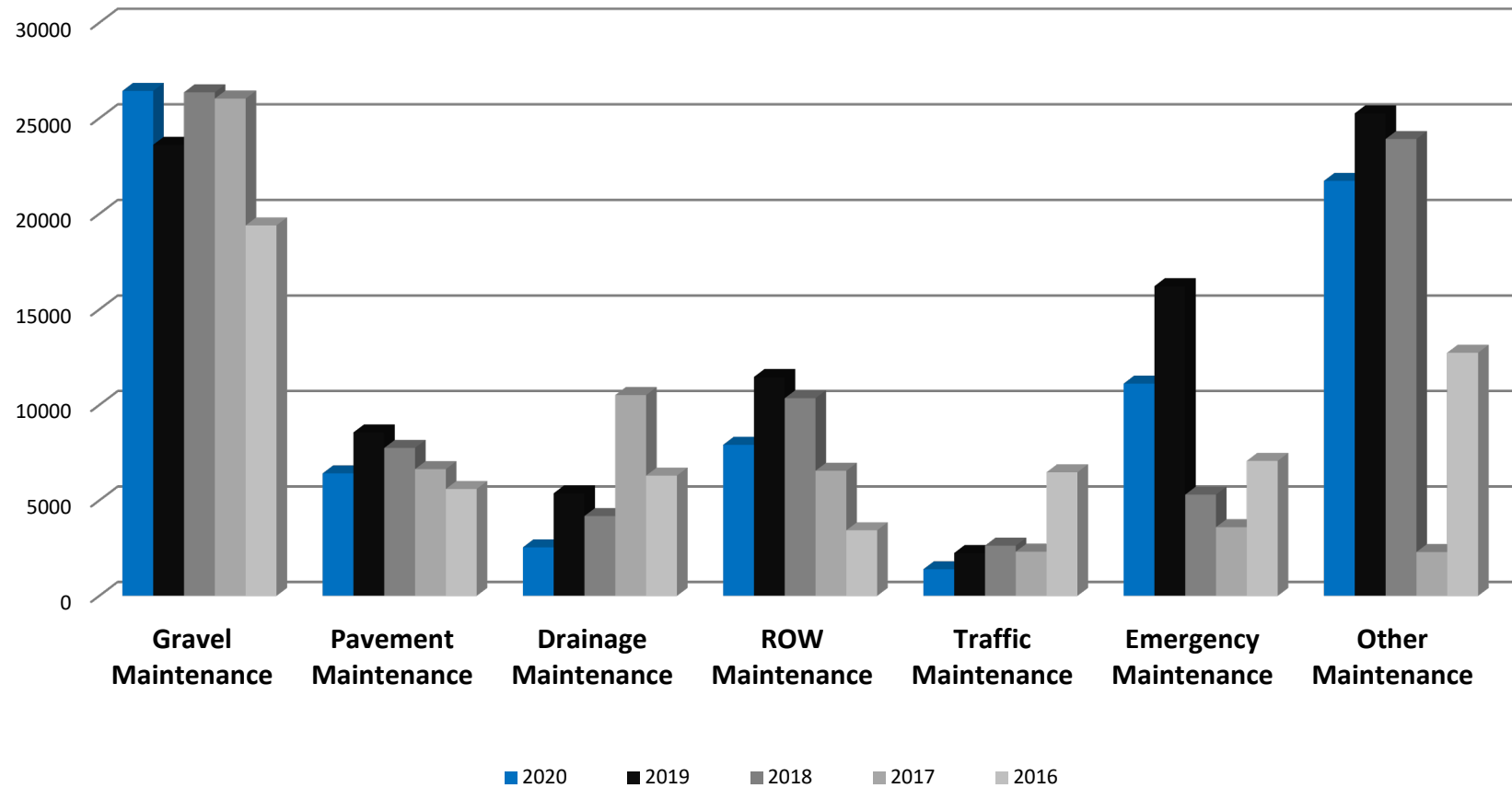




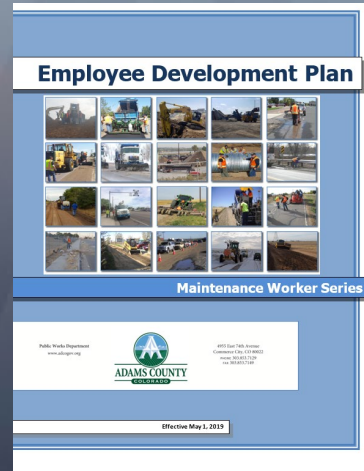
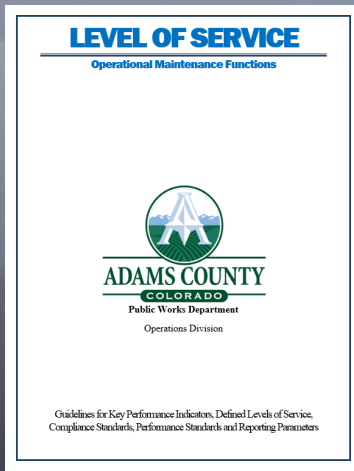
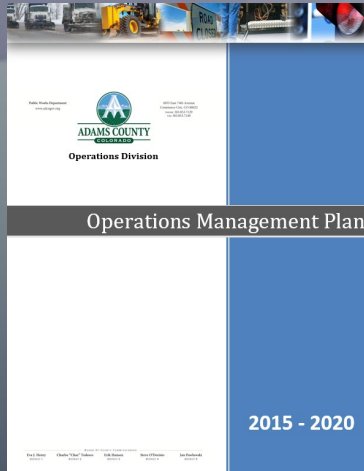
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Telling Our Story – Success

Schedule Labor Hours - Operational Capacity



Telling Our Story – Success



Measurable, Predictable & Repeatable Outcomes



Accountability



Local, National & International Recognition





Innovations



Guiding principles of LOS:

1. Provide a deliberate and methodical approach to planning maintenance.
2. Provide service to all areas within the County’s jurisdictional boundaries with the same basic integrity, prioritization and practice.
3. Service decisions are to be made based on priority, not the history of previous practices or the economic value of private holdings.
4. All roadways and associated assets within the County’s transportation network will have minimum standards for service.
5. Provide open and clear communication of the operational intent.

Gravel Resurfacing Program - Goal

Key Performance Indicator (KPI)

- Option 1:** New layer of surface gravel placed every **6-8 years**
- Option 2:** New layer of surface gravel placed every **9-11 years**
- Option 3:** New layer of surface gravel placed every **12-14 years**
- Option 4:** New layer of surface gravel placed every **15 years or more**

Gravel Resurfacing Program - Strategy

Level of Service- 2019 level achieved

- Service Level A:** 187 or more lane miles completed annually
- Service Level B:** 141 to 186 lane miles completed annually
- Service Level C:** 112 to 140 lane miles completed annually
- Service Level D:** Less than 112 lane miles completed annually



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Innovations – Methodologies

ASPHALT

Longer lifecycle

Weather impacts are not as immediate



GRAVEL



Highly reactive to changing weather

Cycles from good to bad and back to
good rapidly





Innovations – Methodologies

A simplified system can be developed to help silo categories of condition. It can use a scale of excellent condition to failed condition based on the overall condition index range.

Excellent 100 - 86	Good 85.99 - 74	Fair 73.99 - 49	Poor 48.99 - 28	Failed <=27.99
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Innovations – Materials Approach

Additives enhance road surface performance and extend lifecycles



Asset management can keep track of products and their effectiveness



Innovations – Materials Approach

Not all gravel materials are the same:



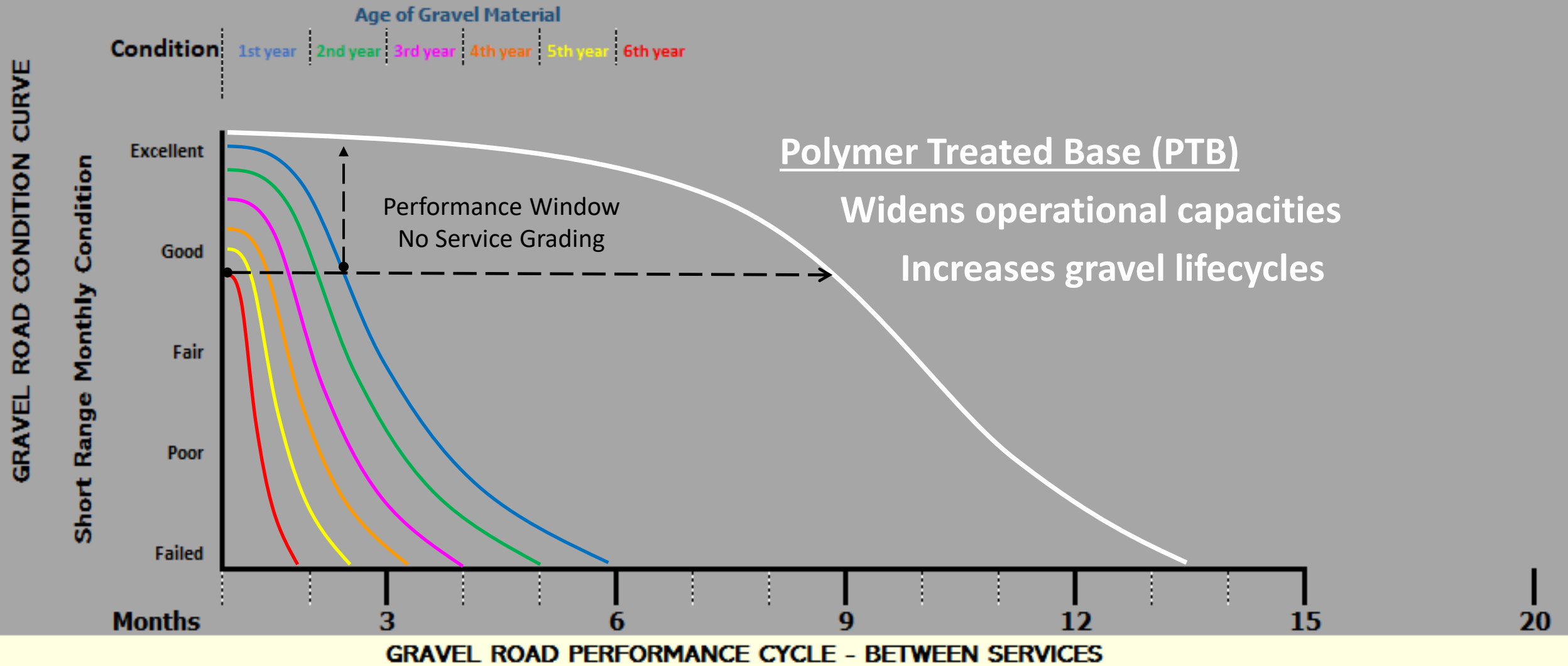
Understanding the real costs of roadway investments





Innovations – Materials Approach

GRAVEL ROADS - SUSTAINED QUALITY (Months)



Innovations – Materials Approach



Gravel Loss from traffic splash out and grading/plow push out



Saturated road = gravel loss and short lifecycles



No gravel Loss from traffic splash out and grading/plow push out



No saturation present = more sustainable and longer lifecycles

Sustainability is not always just about environmental stewardship!

- Opportunity cost
- Operational capacity
- Customer satisfaction
- Industry advancements
- Market Share (monopolizing)

Public Infrastructure will always have a greater need than available funds – We must be creative to preserve what we have





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Innovations – Materials Approach

Reduce paving cost and improve pavement performance



Improve gravel roadway performance, reduce weather impact, reduce maintenance and extend lifecycles



Inject/Mix in

Saturate Coat/Grade/Compact

Finish Coat (72hr)

Stabilized Road

10+ Months – No Grading







Next Steps





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Next Steps – Future of Maintenance

Adams County Public Works Philosophy:

- **Our core responsibility is to provide safe, efficient, and well-maintained network of infrastructure**
- **Establish and understand Levels of Service and desired outcomes**
- **Responsible innovation and experimentation should be commonplace with operational maintenance**
- **Supportive leadership is essential**



Next Steps – Future of Maintenance



- Preservation of investments made today while seeking opportunities for tomorrow
- Focus on proactive maintenance work to reduce/eliminate the need to be reactive
- Identify ways to ensure that our investments are sustainable as economic conditions change
- Engage in responsible creative and innovative practices

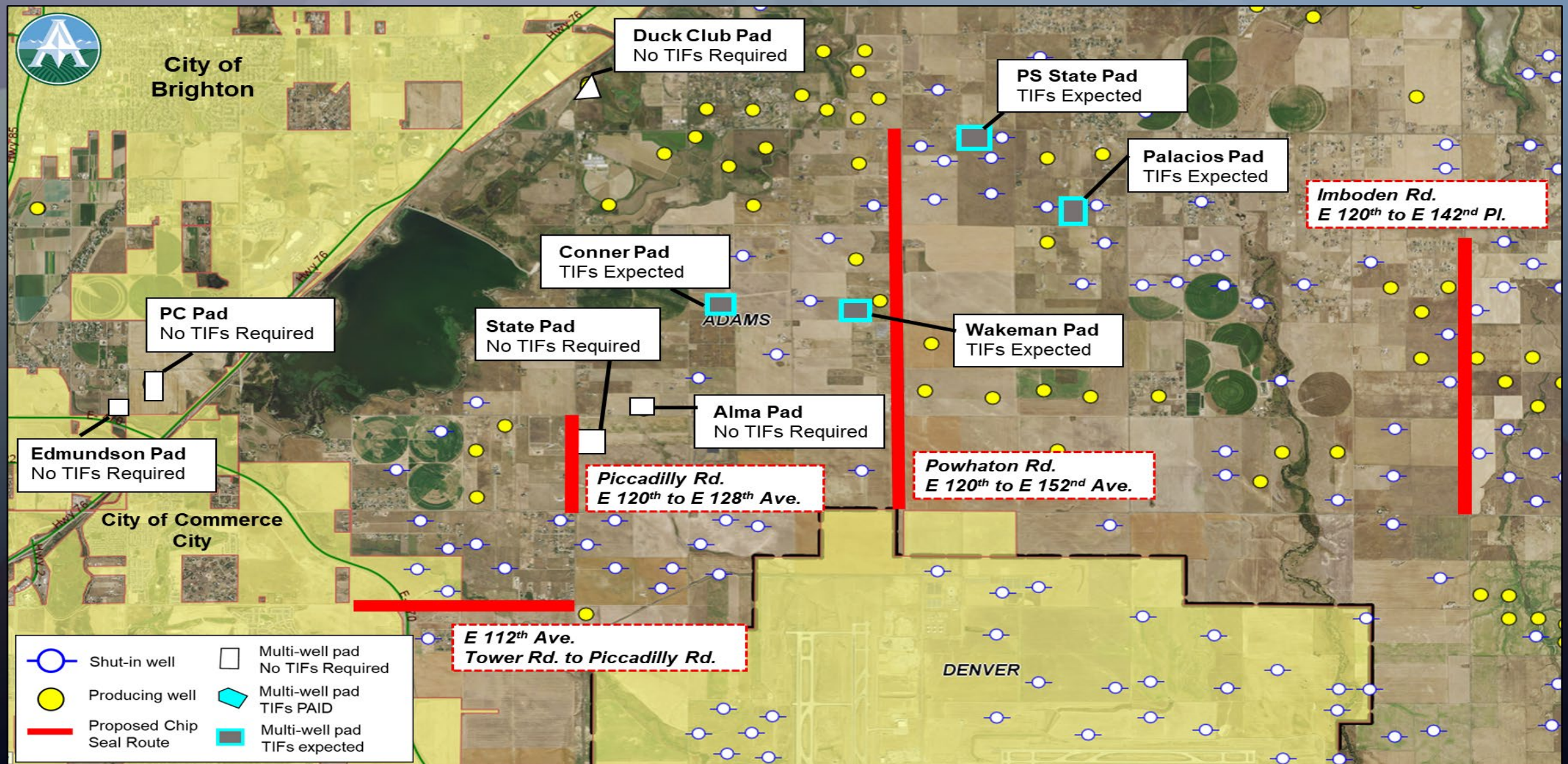


Next Steps – Impact Fees

- When considering impacts from development on gravel roads consider:
 - Operational maintenance capacity
 - Available labor & equipment resources
- It is important to consider opportunity costs when accepting impact fees from developers
- Upgrading gravel roads to paved surfaces is often a preferred solution



Next Steps – Impact Fees



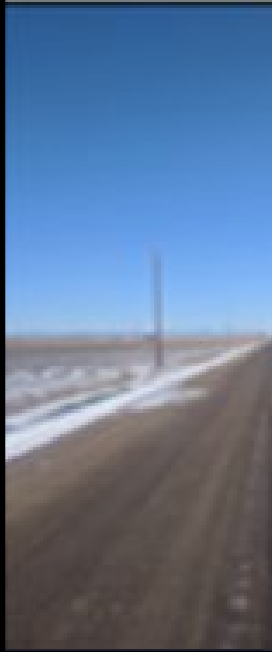





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Next Steps – Roadway Upgrades

❖ Continue advancing gravel additives to reduce maintenance cycles

Installed August 2017

De	June 2018	January 2019	April 2018
	 <p>Skid marks "Burn-out"</p>		



Next Steps – Roadway Upgrades

❖ Chip/Cape Seal Over Polymer Treated Base.



- Capable of producing 5–8-year maintenance free gravel roadway.
- Widely used and proven chip sealing process over gravel is used across the country including in Colorado.





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Questions



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