

OIL & GAS PRODUCTION TRANSPORTATION IMPACT STUDY PUBLIC HEARING

JANUARY 24, 2013

PUBLIC HEARING PURPOSE

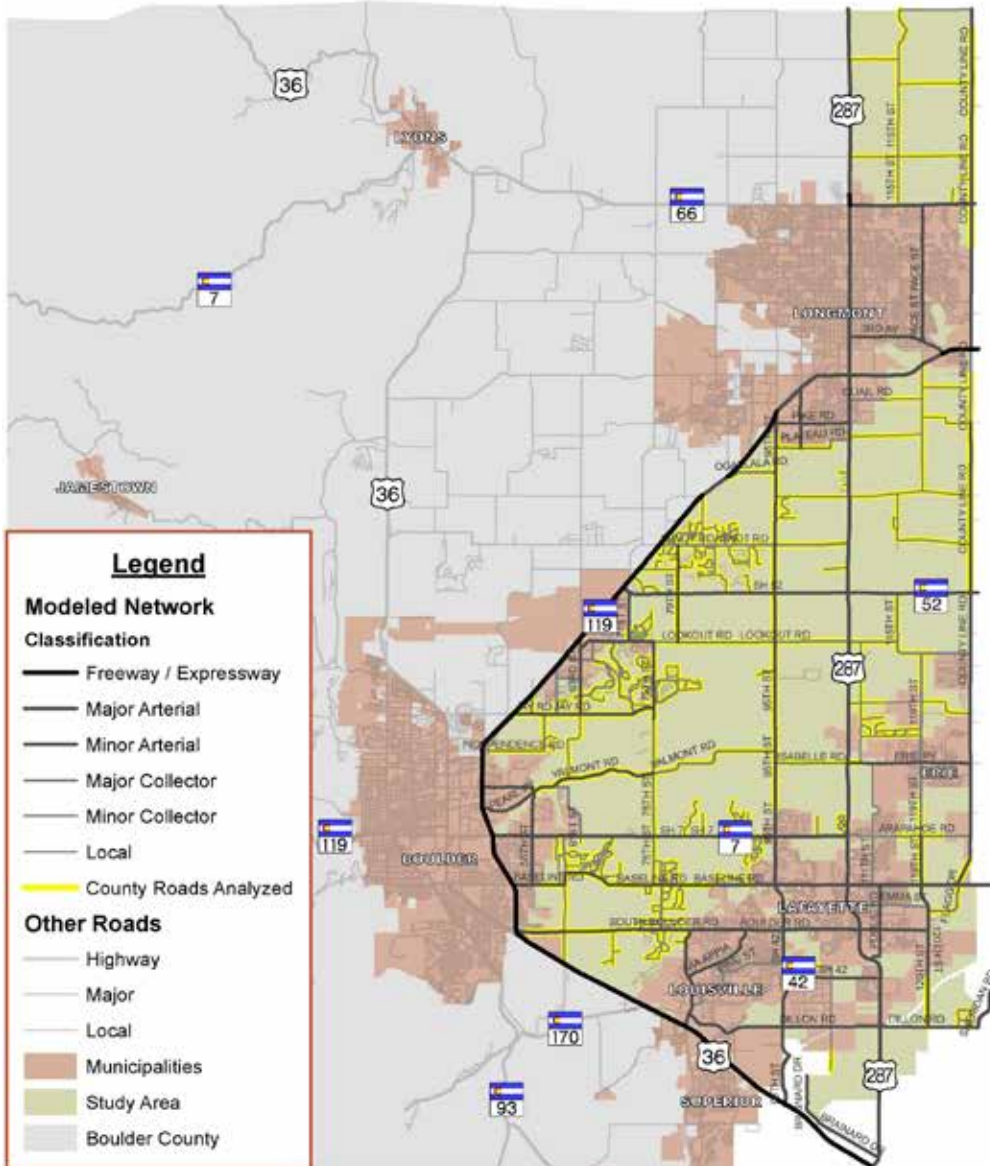


: “...review results of final Oil & Gas Roadway Impact Study, to include consideration of setting appropriate transportation fees for oil and gas activities in the unincorporated county”

- Draft Study Presented at Dec. 6, 2012 Public Study Session - Update/Minor Corrections/Clarifications
- Identified oil & gas impacts on county roads
- Evaluated three development scenarios
- Identify *incremental* rehabilitation costs associated with county road deterioration and safety



TRAVEL MODEL ROADWAY NETWORK



O&G TRAVEL CHARACTERISTICS

Oil & gas industry has unique travel characteristics...

- Dispersed/Migratory
- Intense periods of very large & heavy vehicles
- Evolving: drilling to production
- Uncertain pace and intensity of development
- Uncertain traffic patterns/routes



APPROACH:

- Methodology recognizes uncertainties:
 - Specific Location of drilling is unknown
 - Water sources are unknown
 - Traffic patterns unknown
 - Pace/timing of field development uncertain
- Estimate average costs based on apportionment of expected *incremental* road rehab and safety costs per pad and per well

APPROACH: SCENARIO DEVELOPMENT

Three scenarios

(Based on expected (COGCC) and plausible rig allocations thru 2031)

- Accelerated Scenario
 - 30 pads per year over 9 years (10 rigs)
 - 824 producing wells
- Steady Scenario
 - 15 pads per year over 16 years (5 rigs)
 - 824 producing wells
- Low Scenario
 - 3 pads per year over 16 years (1 rig)
 - 180 producing wells

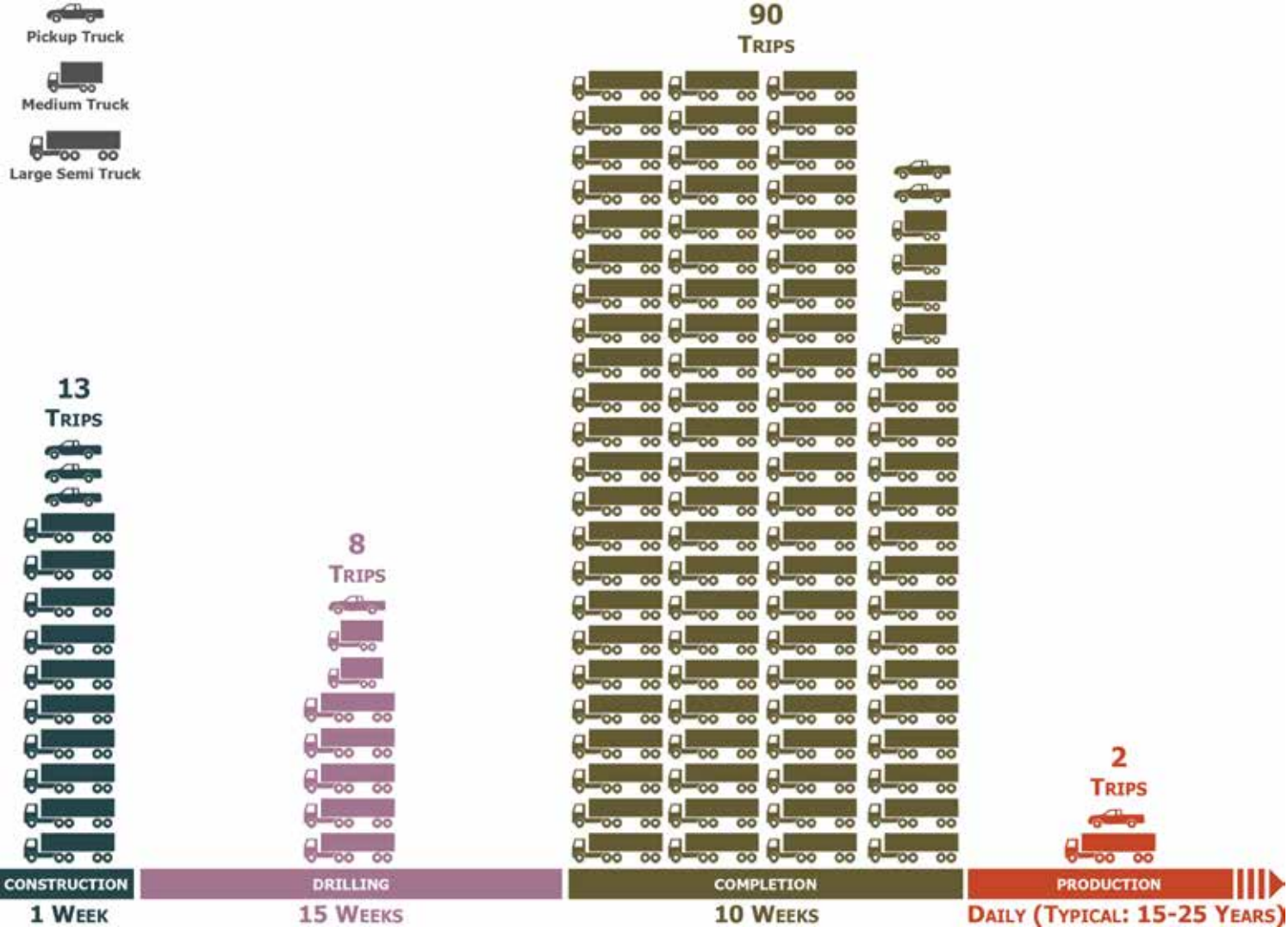
NUMBER OF TRUCK TRIPS BY PHASE



| Phase | | Truck Trips 1 pad, 4 wells |
|--|--|-------------------------------|
| Construction | Pad and Road Construction | 87 |
| Drilling | Drilling Rig | 93 |
| | Drilling Fluid and Materials | 270 |
| | Drilling Equipment (casing, drill pipe, etc) | 453 |
| Completion | Completion Rig | 42 |
| | Completion Fluid and Materials | 170 |
| | Completion Equipment (pipe, wellhead, etc) | 10 |
| | Fracturing Equipment (pump trucks, tanks, etc) | 317 |
| | Fracture Water | 4,152 |
| | Fracture Sand | 191 |
| | Flowback Water Disposal | 1,400 |
| Total Development Trips | | 7,184 |
| Annual Production Trips Per Pad | | 730 |

AVERAGE DAILY TRIPS BY STAGE

For one pad with four wells



Approximate Duration

HEAVY VEHICLE IMPACTS

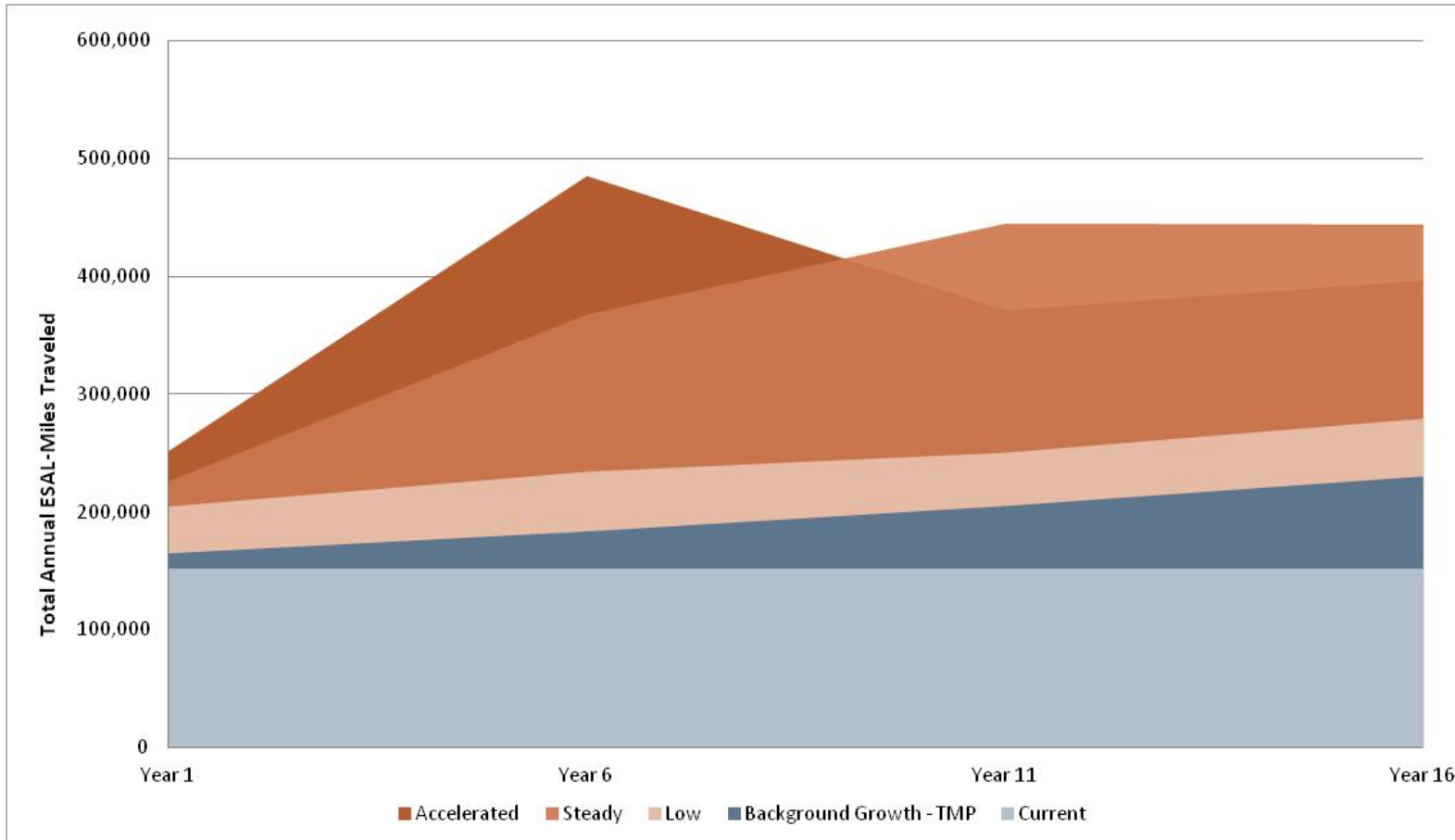
- Loaded water truck:
6,500 - 11,000 times the
load impact of a
passenger car



- Rig truck:
20,000 - 30,000 times
the load impact of a
passenger car



LOADS ON ROADWAY NETWORK



- Vehicle Miles of Travel (VMT) increase is less than 1% over background
- Load increase is 20 – 160% over background

TYPES OF MITIGATION

| Road Type | Mitigation Activity | Road Deterioration | Roadway Safety |
|---|--|--------------------|----------------|
| Unpaved/Gravel | Increased: <ul style="list-style-type: none"> • Grading • Gravel application • Dust suppression | X X X | |
| Asphalt <ul style="list-style-type: none"> • Good/Fair Roads • Poor Roads • Sub-stand shldrs. | <ul style="list-style-type: none"> • Incr. overlay freq. • Expedited Rd. Recon. • Shoulder widening | X X | X |
| Concrete <ul style="list-style-type: none"> • Reduction in service life | <ul style="list-style-type: none"> • Expedited Recon. | X | |

O&G TRANSPORTATION IMPACT COSTS BY SCENARIO (2012 \$)



| Scenario <u>Assumptions</u> - 16 year timeframe - 824 wells max - 4 wells/pad | Road Damage Rehab. Cost | Road Safety Mitigation Cost | Total Cost | Average Cost/Well by Scenario |
|---|-------------------------------|--------------------------------------|--------------|--|
| Low - 1 rig operating - 3 pads/yr. | \$5,965,501 | \$2,105,360 | \$8,070,861 | \$44,838 |
| Steady - 5 rigs operating - 15 pads/yr. | \$24,661,955 | \$2,843,220 | \$27,496,175 | \$33,369 |
| Accelerated - 10 rigs operating 30 pads/yr. | \$24,393,296 | \$2,843,980 | \$27,237,276 | \$33,055 |

AVERAGE O&G TRANSPORTATION IMPACT COSTS (2012 \$)

| | Road Rehabilitation Cost | Road Safety Cost | Total Cost |
|--|--------------------------|------------------|-----------------|
| Per Pad | \$1,200 | - | \$1,200 |
| Well Costs By Phase (rounded) | | | |
| - Development | \$26,000 | \$6,200 | \$32,200 |
| - Production | \$4,600 | | \$4,600 |
| Total | \$30,600 | \$6,200 | \$36,800 |
| (Note: Increased unpaved road maintenance costs < 1% total cost) | | | |
| Example - 1 pad with 4 wells (rounded) | | | |
| All Phases | \$123,600 | \$24,800 | \$148,400 |

SUMMARY

A comprehensive estimate of impacts on the county transportation system from the O&G development thru 2031 and needs and costs for capital road infrastructure to safely accommodate O&G related traffic.

POTENTIAL REGULATORY STRUCTURE- TRANSPORTATION IMPACTS



| Review Process Type of Impact | Transportation Mitigation Plan per Land Use Code | <u>Operator Option:</u> - Offsite Road System Rehab Fee <u>OR</u> - Site Specific Plan / Offsite Impact Analysis if: - route commitment - special circumstances |
|--------------------------------------|--|--|
| Private Access Road Const. | X | |
| Dust suppression, mud tracking, etc | X | |
| Intersection Safety | X | |
| Off Site: Road Damage | | X |
| Off Site: Road Safety | | X |



QUESTIONS / DIRECTION

Next Steps for Your Consideration:

- Option 1: No Action
- Option 2: Adopt fee based on study results
- Option 3: Direct staff to return in 2-3 months with maximum legally defensible fee under Colorado law and/or explore the best avenue to address impacts via cost recovery mechanism from industry