SINCE 1918

DARIGOLD®

129,000 Pound Truck: Transforming the Dairy Transportation Supply Chain

Meet Darigold and NDA

- Darigold and the Northwest Dairy Association (NDA) is the Producer Cooperative of Choice in the Pacific Northwest

- Darigold is one of the nations largest dairy cooperatives in the United States, producing over 8.4 billion pounds of milk annually with $2.1 billion in annual sales

- Darigold has farms and manufacturing facilities in WA, OR, ID, and MT

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Our Pledge for Carbon Neutrality by 2050

Darigold and the NDA recently pledged to achieve carbon neutrality in our entire farm to consumer supply chain by 2050

Darigold and NDA aim to achieve this goal by:

- Investing in renewable energy technologies and energy efficiency programs
- Promoting farm-level carbon sequestration projects
- Modernizing our processing and transportation network

One of our first major initiatives is within Darigold's Bulk Fluid Transportation space to increase truck GVW to 129,000 pounds

The 129,000 Pound Truck

Reducing the number of trucks on the road, is one of our most effective ways to reduce the carbon emissions from transportation. We can reduce the number of trucks by increasing our payload per truck in our bulk milk hauling trucks.

Darigold recently completed the transition of its entire farm milk pickup operation in Idaho to 129,000-pound trucks resulting in **18.7% less miles driven** and **9.1% less gallons of diesel fuel consumed.**

This reduced emissions for 20% of our network, and have potential to reduce emissions in another 22% of our network for the milk and milk components moving intrastate and interstate Oregon.

Oregon State is at an Economic Disadvantage

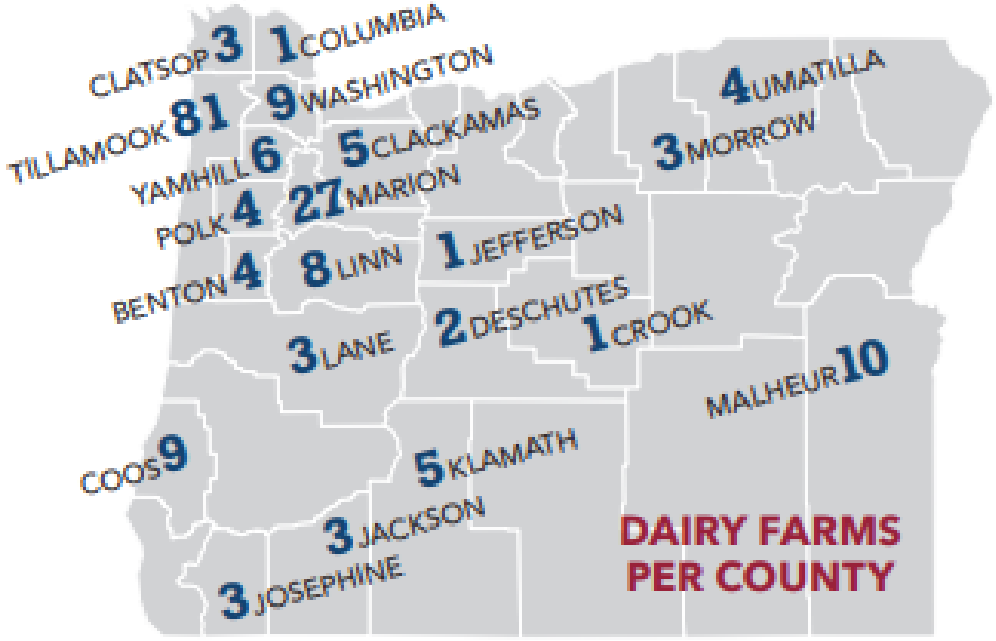
According to the Directory of Significant Truck Size and Weight Research, increased truck size and weight limits consistently result in industry cost savings.

Estimated industry cost savings — attributable to increased truck size and weight limits and subsequent use of alternative configurations — generally range from 1.4 to 11.4 percent of annual transport costs in the United States [4]

Darigold's internal estimates show a realized savings of between 7% and 8% in annual transportation costs in areas where the 129,000 pounds truck configuration has been implemented

Eight out of eleven of the most western states (excluding AK and HI) have truck weight limits above 110,000 pounds giving these states a distinct economic advantage for businesses located in these states[3]

Cooperatives: ***70% of Oregon farms belong to Tillamook, Darigold or Organic Valley***



129,000 LB Truck Offers a Great Solution

Misconception	Facts As We Know Them
• 129,000 LB trucks are illegal at the Federal level due to Intermodal Surface Transportation Efficiency Act (ISTEA) freeze of 1991	• 2015 Fixing America's Surface Transportation Act (FAST) designated trucks carrying Dairy products as non-divisible loads • States may issue permits for such vehicles, in accordance with State law, to exceed the gross weight limit of 80,000 pounds or the maximum weight allowed by the Federal Bridge Formula[2]
• Heavier trucks cause more damage to the roadway than lighter trucks	• Axle weights are the largest determinate for road damage caused by a truck • The Equivalent Single Axle Load (ESAL) methodology states the relationship between axle weight and roadway damage is exponential. As we reduce axle weights the roadway damage decreases exponentially[5] • The proposed 129,000 LB truck configurations has 9 or 10 axles, reducing the weight per axle well below other lower weight configurations. In addition, the 129,000 LB configuration also reduces total trips due to increased payload. These two factors can result in up to **52% less stress to the roadway** according to the University of Idaho.[6]
• Heavier trucks are more dangerous to public safety	• Research from the National Cooperative Highway Research Program (NCHRP) found heavier trucks were associated with fewer crashes due to fewer trucks needed

Appendix

Background

Federal involvement in commercial motor vehicle size and weight dates back to enactment of the Federal-Aid Highway Act of 1956, which authorized the Interstate System. The Act established weight limits to protect the Federal Investment in the Interstate System from excessive damaged caused by overweight commercial vehicles. The 1956 Act also included a grandfather clause allowing States to retain any higher axle and GVW limits they had already enacted, as well as their authority to continue issuing overweight permits under the conditions in effect that year.[1]

The Federal-Aid Highway Amendments of 1974 increased Federal axle weight limits to the maximum allowed today – 20,000 and 34,000 pounds for a single- and tandem-axles, respectively. This law also set the maximum Gross Vehicle Weight (GVW) at 80,000, provided the vehicle complies with the Federal bridge formula, which sets maximum gross weight limits for groups of axles in accordance with the number and spacing of the axles. The Federal limits were maximums only, and several States chose to retain their lower, pre-1975 Interstate limits. The disruption to national uniformity created by these so-called “barrier States” prevented motor carriers from fully utilizing the new higher weight limits.[1]

The Surface Transportation Assistance Act of 1982 addressed this situation by making the 1975 maximum weights also the minimum States must allow.[1]

Even through the maximum GVW for commercial motor vehicles on the Interstate System was set at 80,000 pounds in 1975, a number of State interpreted their grandfather permit authority broadly and allowed the operation of increasingly heavy trucks that came to be known as longer combination vehicles (LCVs). An LCV is any combination of a truck-track and two or more trailers or semitrailers operation on the Interstate System with a GVW greater than 80,000 pounds.[1]

FAST Act

In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) froze the weight of LCVs on the Interstate and the length and configuration of longer double and triple trailer combinations on the National Network. This is commonly is known as the "ISTEA freeze".[1]

There are times when heavy loads need to move on the Interstate system, including loads carrying generators for power supply in emergencies, windmill turbines and blades for generating power, or manufactured housing. Federal law allows all States to issue permits for oversize or overweight loads that are non-divisible. Federal regulations define as non-divisible any load or vehicle exceeding applicable length or weight limits which, if separated into smaller loads or vehicles, would compromise its intended use, destroy its value, or require more than eight work hours to dismantle.[1]

In 2015 the Fixing America's Surface Transportation Act (FAST) was enacted. The FAST act provides funds for surface transportation programs. Section 1409 Milk Products specifically deals with Milk Products:[2]

The FAST Act amends 23 U.S.C. 127(a) to establish that a ***vehicle carrying fluid milk products shall be considered a load that cannot be easily dismantled or divided (non-divisible). States may, therefore, issue permits for such vehicles, in accordance with State law, to exceed the gross weight limit of 80,000 pounds or the maximum weight allowed by the Federal Bridge Formula. [23 U.S.C. 127(a)(13)]***[2]

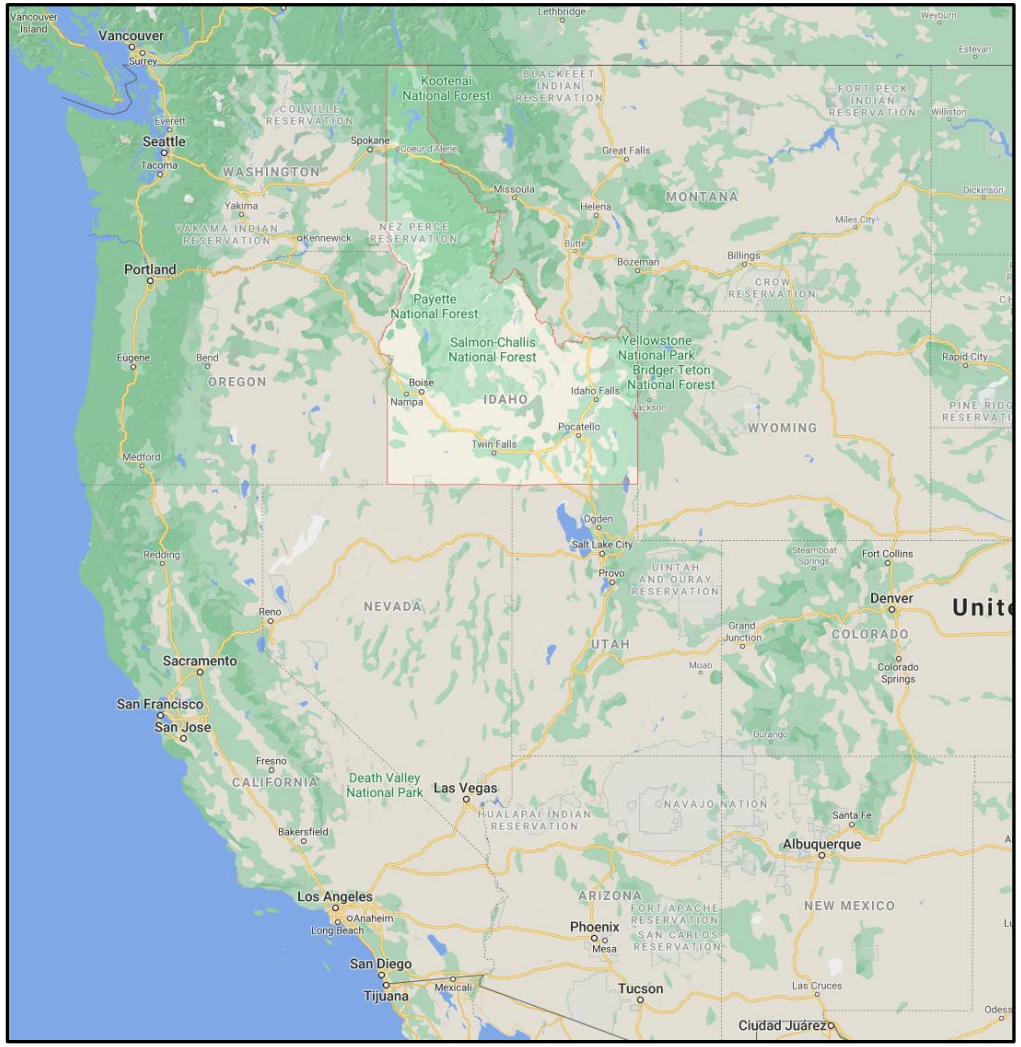
Exceptions to Federal Limits

As of a 2015 list compiled by U.S. Department of Transportation Federal Highway Administration for Report prepared for congress, there are 38 states with exceptions to the federal weight limits.[3]

Of those 38 states, 17 of the states include limits on GVW over 105,500 and 10 of the states have limits on GVW above 129,000. Michigan has the highest maximum GVW of any state at 164,000 pounds, which includes single axle limit of 18,000 pounds and tandem axle limit of 32,000 pounds.[3]

Along west side of the United States, there are many states with GVW laws exceeding federal limits. Specifically, Idaho, Montana, Nevada, Utah, Wyoming, Arizona, and Colorado all have GVW limits of 110,000 pounds or greater.[3]

Washington State recently passed Senate Bill 5531 providing the path for GVW limit of 129,000 pounds for dairy products.



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Idaho 129,000 Pound Pilot Program

In 2003, the Idaho Legislature passed House Bill 395, which created a pilot project to test the effect of increasing the legal truck weights on State Highways. Trucks configured to increase gross vehicle weight(GVW) from 105,500 pounds to 129,000 pounds were permitted on 16 specified routes. In 2005 and 2007, an additional 19 routes were included for a total of 35 specified routes.[4]

The Idaho Transportation Department (ITD) was tasked with studying the impacts of the pilot project on roadway safety, bridges, and pavement, and reporting to the Legislature every three years. In their final report to the Legislature, ITD reports that they did not observe any significant effect of the 129,000 pound pilot project trucks on pavements, bridges, or roadway safety. Pilot participants reported material economic benefits, primarily derived from reduction in trips driven and less diesel consumed.[4]

Darigold partnered with Idaho Milk Transport in 2019 in order to transition milk pickup operations to the 129,000 pound vehicle format. In the first year of operation, Darigold and Idaho Milk Transport have achieved a 18.7% reduction in miles required to pickup and deliver the milk to market as well as 9.1% reduction in gallons of diesel consumed.

Impact To Roadways

Understanding Impact of Trucks on the Roadway

- **ESAL** (Equivalent Single Axle Load) methodology is used to estimate impact on roadway surfaces caused by truck traffic[5]
- Developed by the American Association of State Highway Officials through what is known as the AASHO Road Test in 1961[5]
- ESAL methodology can be used to compare the impact of different truck and trailer configurations on the roadway[5]
- ESAL methodology:
  - "Convert(s) damage from wheel loads of various magnitudes and repetitions ("mixed traffic") to damage from an equivalent number of "standard" or "equivalent" loads. The most commonly used equivalent load in the U.S. is the 18,000 lb (80 kN) equivalent single axle load (normally designated ESAL)"[5]
- If a particular axle load is given an ESAL rating of 2, that means that the axle load causes twice the damage of the standard Single Axle Load of 18,000 lbs[5]
- The relationship between axle weights and ESAL rating is non-linear[5]
  - An 18,000 lbs single axle does **over 3,000 times more damage** to a pavement than a 2,000 lbs single axle
  - A 30,000 lbs single axle does about **67 times more damage** than 10,000 lbs single axle
  - A 30,000 lb single axle does about **11 times more damage** than a 30,000 lb tandem axle

Understanding Impact of Trucks on the Roadway

In 2016 the *"Guide to Assist Idaho Local Highway Jurisdictions in Evaluating Route Requests for Trucks up to 129,000-Pounds"* was published by the University of Idaho on behalf of the Idaho Transportation Department.[6]

The following is an excerpt from Appendix B of the guide.

105,500 Pound Trucks Cause the Most Damage

Table 1: ESAL calculation per truck [6]

	Truck Configuration	ESALs
1	80,000-pound GVW (Fig.A1)	2.38
2	105,500-pound GVW (Fig.A1)	2.80
3	129,000-pound GVW (Fig.A1)	1.99
	129,000-pound GVW (Fig.A2)	1.87

105,500 equipment cause the most damage to roadways per trip

[6]

*"… the **129,000-pound truck will cause approximately 29% less stress to the roadway** than the **105,500-pound truck** …"*

*"Comparing the net cargo weights between the 105,000-pound truck and the 129,000-pound truck, the **129,000-pound truck caries 30% more cargo**. This can be translated to **30% less truck loads on the roadway** … using these 129,000-pound trucks, the ESALS causing **stress to the roadway could be reduced to 52% of the current level."***

[6]

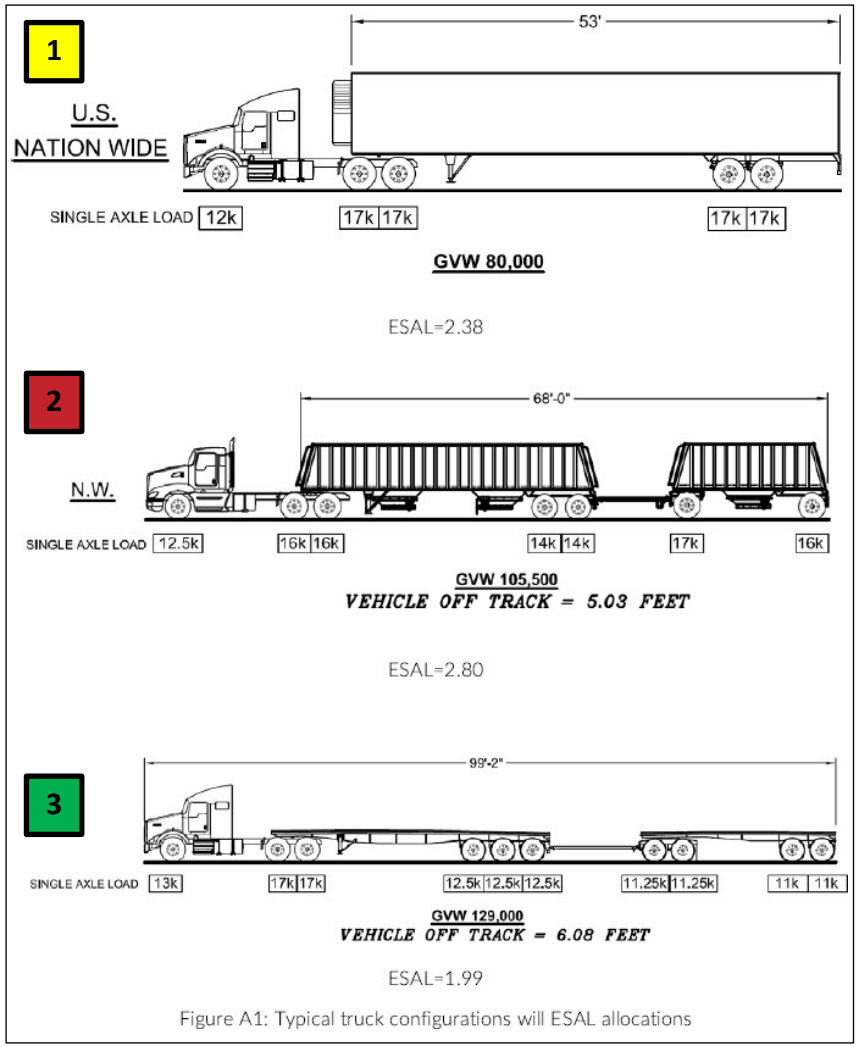


Figure A1: Typical truck configurations will ESAL allocations

Public Safety

Decrease in Crashes due to Fewer Trips

The National Cooperative Highway Research Program (NCHRP) developed a Directory of Significant Truck Size and Weight Research under NCHRP Project 20-07, Task 303 to provide a brief, well organized summary of significant research related to large truck size and weight for use by decision-makers. The Directory was published in October 2011. In summary, the research found heavier trucks were associated with less crashes due to fewer trucks needed, but higher crash severity. Oversized, overweight trucks were observed to have slightly higher crash rates due to vehicle handling and stability characteristics. Overall, results relating to truck configuration are inconclusive.[4]

In ITD's report to the Idaho Legislature regarding observations on safety related to the 129,000 pound pilot program, ITD notes:

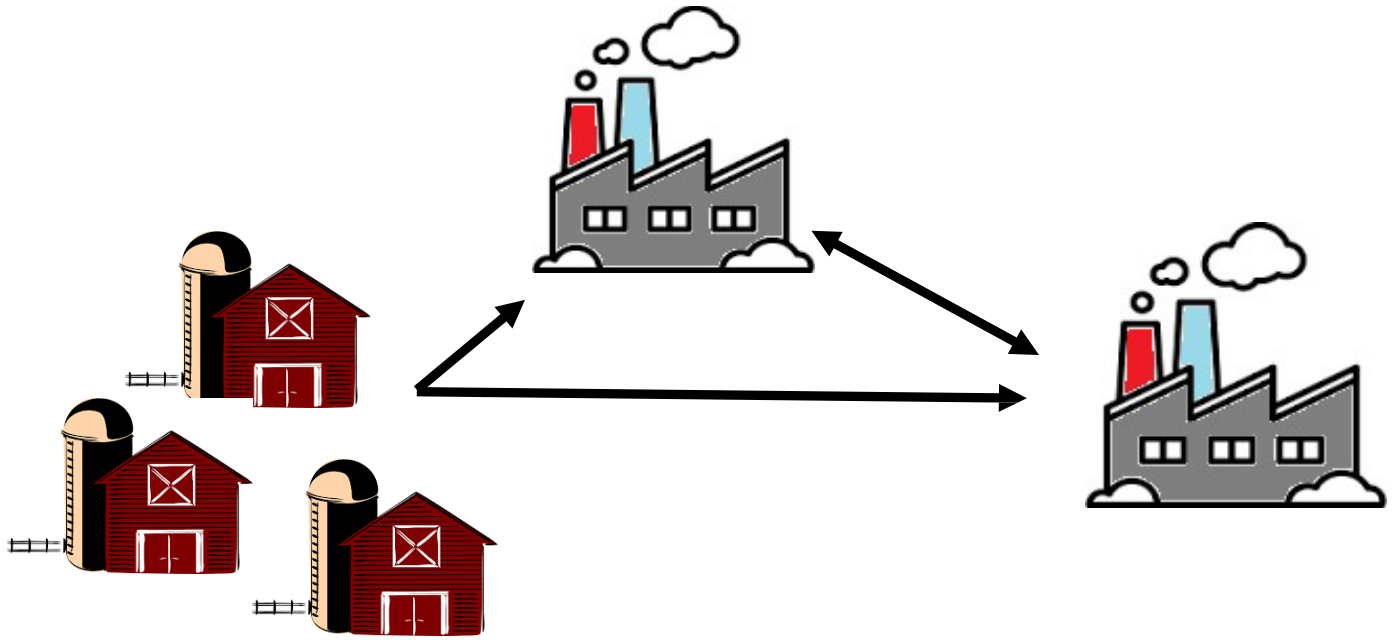
"There was very little difference in the total vehicles crash rate between the pilot project routes, most utilized pilot project routes, and all routes. There was a slight increase in the crash rate for trucks on pilot routes compared to commercial crash rates on non-pilot route… None of the increases in crash rates observed are statistically significant."[4]

The authors of the 2016 "*Guide to Assist Idaho Local Highway Jurisdictions in Evaluating Route Requests for Trucks up to 129,000-Pounds"* note that 129,000 pound trucks configurations have more stopping power than other configurations due to presence of brakes on the additional axles.[6]

Emissions Reduction

Fewer Road Miles Lead to Lower Emissions

- According to U.S. Energy Information Administration, each gallon of diesel full consumed emits 22.40 pounds of carbon dioxide[8]
- Darigold estimates that for the first year of operating the 129,000-pound truck configuration in Idaho, Darigold reduced total miles driven by 18.7% and total gallons of diesel consumed by 9.1%
- In Oregon, Darigold has operations in Portland and services customers in Oregon on the I- 5 corridor as well as in Eastern Oregon



References

References

1: Truck Weights and Lengths: Assessing the Impacts of Existing Laws and Regulations

2: FAST ACT Section 1409 Questions and Answers

3: Appendix B: Summary of State Exceptions to Federal Truck Weight Limits

4: Report to the 62nd Idaho Legislature: 129,000 Pound Pilot Project - Idaho Transportation Department

5: Pavement Interactive - Equivalent Single Axle Load

6: Guide to Assist Idaho Local Highway Jurisdictions in Evaluating Route Requests for Trucks up to 129,000-Pounds

7: 2017 Washington State Freight System Plan

8: EIA: Carbon Dioxide Emissions Coefficients