Presenters are; Mark S. Michael. I began my career with INDOT just a short time ago. I retired from ISP with 33.5 years as a Trooper. I am certified in FMCSR as a level one Inspector. I have been involved with Federal and State regulations regarding oversize commercial motor vehicles for over 25 years.

Co-Presenters are: Jack Kimmerling was promoted to the Director of Freight in May 2013. Jack has worked at the Greenfield office with INDOT for over 26 years and has experience with Federal and State regulations concerning oversize and overweight vehicles as well as permits for oversized loads.

Dick Hayworth had worked at the Department of Revenue (DOR) for over 15 years. Dick is currently the commercial vehicle information system network Program manager of DOR. Dick is very familiar with Federal and State regulations regarding oversize vehicle permitting and penalties.
Prior to HB 1481 a permit was not available for this type haul and this type commodity. We have received complaints the charges were too high. As you can see from the slide, a comparison of the new rule and previous statute HB 1481 indicates the fees are in fact less.

<table>
<thead>
<tr>
<th>PRIOR TO HB 1481</th>
<th>AFTER INDOT EMERGENCY RULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divisible loads were not permitted.</td>
<td>Metal and agricultural commodities can legally be permitted. INDOT kept spirit of HB 1481 in place.</td>
</tr>
<tr>
<td>$20.00 administration fee per permit.</td>
<td>Unchanged.</td>
</tr>
<tr>
<td>No annual permit has ever been available for overweight loads.</td>
<td>New overweight annual permit will be available in the first quarter of 2014.</td>
</tr>
<tr>
<td>Permits were more expensive.</td>
<td>New rules provide many permits that are less expensive than previous non-divisible permits.</td>
</tr>
<tr>
<td>Permit request: 118,000 lbs going 153 miles = $111.60</td>
<td>Same request: 118,000 lbs going 153 miles = $87.00</td>
</tr>
<tr>
<td>Permit structure based upon total gross vehicle weight.</td>
<td>Permit structure based upon ESAL's, which creates a path to reduce permit fee to just the $20.00 administrative fee if ESAL value can be kept at/or below 2.4.</td>
</tr>
</tbody>
</table>
What did HB 1481 actually do? It allowed INDOT to;

- Establish axle weights and permit fees up to 120,000 lbs for metal and 97,000 for agricultural products.
- It also caused a study to be conducted by INDOT by the end of 2014 of the impact the overweight divisible loads have on roadways. The study involves the impact of overweight divisible loads on;
  1. Road and bridge degradation
  2. Alternative modes of transportation
  3. Indiana’s economic and job growth
  4. Indiana’s business and economic competitiveness relative to other midwestern states.
This is a timeline of how the rule was implemented. It was required by statute to be completed by 12-31-2013.
Goals For Proposed Rules

- Help Indiana’s businesses and taxpayers by modernizing the freight policy to become more compatible with neighboring states.
- Be equitable to industry and taxpayers alike. Customers should only pay for the quantity of infrastructure resources they consume.
- Be customer friendly; may include multi-trip or annual permitting options.
- Have fee structures that make sense.
- Encourage business decisions that will help preserve Indiana’s infrastructure.

What are the goals for the new rule? IT will; (Read Slide).
The purpose of the Overweight Divisible load legislation was to help Indiana's freight policy become more compatible with Ohio, Kentucky and Michigan that have special permits for various commodities.

Ohio has just changed their permitting regulations for divisible loads as well as Indiana.
KY and OH presently have special divisible load permits, but only for selected commodities (Ohio has just made extensive changes effective this year, we are not sure exactly what the rules are and how they will affect Indiana at this point). Both neighboring states allow the permitting of metal, but only in the form of 2 or 3 steel coils.

Michigan allows high limit GVW loads up to 164,000 lbs for a variety of commodities, but requires special equipment with up to 11 axles, each with maximum axle weight of 13000 lbs.
Background – Commodities

- What types of divisible loads are eligible for these types of permits in Indiana?
  - Metal commodities
  - Agriculture commodities
    - Consistent commodities with surrounding state policies

1) Metal commodities in their most basic original form: Metal coils, rods or plates going from a mill to the first customer, but not manufactured parts going from a manufacturer or a supplier to an another customer. Not material used in the production of metal coils such as ore or scrap metal.

2) Agriculture Commodities in their most basic original form: Products going from the farm to the first market, but not processed items such as corn syrup, oils or flour. Not items used in the production of agriculture products such as fertilizer or seed.
Indiana’s highway system of roads, bridges, and safety devices were designed with the 80,000 lb tractor trailer as the normal heaviest and largest “design” vehicle. Permits were issued for nonconforming loads that could not be easily avoided such as oversized or overweight non-divisible loads. These loads have been few in numbers and are monitored closely to limit potential damage to the infrastructure. The Department of Transportation continues to recommend that the 80,000 lb tractor trailer remain the normal legal design vehicle that the system was designed for, while allowing the permitting of an additional limited number of low trip volume commodities that have significant economic impacts on the state. Later in the presentation you will see why INDOT needs to monitor the overweight permits above the 80,000 lbs.
### Current vs. New Load Permits

- **What about the non-divisible load permits?**
  - Non-divisible 80K, 108K, 120K, 200K
  - Heavy Duty Highway Michigan Train up to 134K

- **What about the divisible load permits?**
  - Metal is allowed overweight up to 120K
  - Agricultural is allowed overweight up to 97K

Metal Commodities: Divisible load for metal commodities were previously restricted to special “Michigan Train” permits that required special equipment and could only operate on designated “Heavy-duty Highways” in NW Indiana. The new permits will expand that network to include interstates and other routes capable of carrying the increased weight. The permit fee structure is increased by the weight. Over 80K begins at .35 cents a mile. Over 108K is .65 cents, 120K to 200K is $1.00 a mile. Over 200K is considered a superload and has a separate fee structure. The agricultural permit has 0-% tolerance.
The Department of Transportation will be using a ESAL (Equivalent Single Axle Load) based permit so that customers pay fees based more toward the quantity of infrastructure resource consumed.

- Loads and pavement life is measured in ESALs.

The Department of Transportation will be using a ESAL (Equivalent Single Axle Load) based permit so that customers pay fees based more toward the quantity of infrastructure resource consumed. ESAL based permits are fair because any load, regardless of configuration, can be measured in ESALs, and pavement life can be also measured in ESALs, so the pavement life consumed by each load can be measured directly. A particular roadway is usually engineered to support a particular amount of ESAL's. Once the ESAL's are used up, the roadway is deteriorated to the point it has to be replaced (it is consumed). This is why using the ESAL is so important. INDOT can get a better idea of how much damage a particular load will cause to the roadway, and only charges for that usage.
Each axle ESAL value is calculated as the axle weight raised to the 4th power, divided by either the single or tandem divisor. $(weight/divisor)^4$

Single axle ESAL divisor is 18,000 lbs
Tandem axle ESAL divisor is 33,200 lbs
You will notice the increase in damage to the roadway from 80,000 to 100,000 increased dramatically from a 2.4 ESAL to a 6.33 ESAL. The increase in gross weight is 25% however; the increase in ESAL indicates approximately a 270% increase. This illustrates the 4th power curve in damage. One point to mention is that if you want to reduce the pavement damage, add an axle to the 100K load. That will reduce the ESALs and damage to the pavement.
This slide is a comparison of 3 trucks at the same gross weight (240,000 lbs) which is the same gross weight as the 2 trucks. As you can see by the slide 3 trucks that operate 5 days a week and drive 150 miles a week for a year (50 weeks). 2 trucks operating 5 days a week driving the same distance (150 miles) will only travel 75,000 miles.
This slide represents converting the gross weight in the slides earlier to ESAL's. Calculating ESAL's at .07 cents a mile. It was determined that for every ESAL in a mile of roadway it cost .07 cents to build the road.

The ESAL's in the slide are 2.4 ESAL's (taken from calculations below). If you multiply the 2.4 ESAL x 3 trucks = 7.20 ESAL's. 3 trucks @ 112,500 miles = 810,000 ESAL-Miles x .07 (cents) = $56,700 in damage.

The 2 trucks in this example equal 9.14 ESAL's (by axles). If you multiply 9.14 ESAL's x 2 = 18.28 ESALs. 2 trucks @ 75,000 miles = 1,371,000 ESAL-Miles x .07 (cents) = $95,970 damage.

As you can see in the slide above the 3 80,000 lb trucks indicate a pavement damage amount of $18,900 per truck. The slide also indicates the 2 120,000 lb trucks represented will cause a dollar amount of approximately $47,985 per truck.

The conclusion is that the overweight 120,000 lb truck does more than twice the amount of damage that the 80,000 2.4 ESAL truck would cause.
One of the questions we have had is whether the cost of fees and taxes offsets the cost of the damage of overweight vehicles. If you compare the miles driven by both trucks and divide it by MPG and then multiply it by fuel tax. The 3 trucks in the example paid $11,893 and the 2 trucks paid $7,928 in fuel tax.

The fuel tax up to 2.4 ESAL is considered a legal load, so the 3 trucks would not have to pay for an overweight permit.

The 2 trucks would have to pay for a permit because they are over 80,000 lb and over 2.4 ESAL’s. Therefore they had 500 trips @ 91.00 per permit fee for a total of $45,500.

If you compare the cost of both sets of trucks, the unrecovered amount of damage estimated by the 3 80,000 lb trucks is $14,936. The estimated cost of the 2 120,000 lb trucks in the example resulted in unrecovered damage per truck of $21,171.

The conclusion in both scenarios is that both sets of trucks do not pay for the amount of damage total that was caused by the trucks. The per truck unrecovered cost of damage to the roadway by each 120,000 lb truck was 40% greater than each 80,000 truck.
### ESALs: Axles vs. Weight

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<tr>
<th>GVW</th>
<th>ESAL 5 Axle</th>
<th>ESAL 6 Axle</th>
<th>ESAL 7 Axle</th>
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<td>1.48738861</td>
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</tbody>
</table>

**Explain legend:**

White: Less than 80,000 lbs – no permit required.

Green: Less than 2.4 ESALs – $20 Multi-trip Permit ... no more damage than an 80,000 lb truck.

Orange: Greater than 2.4 ESALs, but within allowed weight – Permittable using ESAL-mile based calculation fee.

Red: Not permittable (Over axle or Over GVW)

More damage, higher cost of permits.

Less damage, lower cost permits.
The permit fees will pay a higher percentage of the cost of the road and bridge infrastructure consumed plus the administrative cost to issue the permits.

A legal 80,000 lb, 5 axle, tractor trailer is measured to be approximately 2.4 ESALs. Loads exceeding 80,000 lbs require permits and will be charged for those additional ESALs greater than 2.4.

Permitted ESALs are the total vehicle ESAL minus the 2.4 ESALs allowed without a permit. (ESAL-2.4)

ESAL Miles are the permitted ESAL value multiplied by the miles to be driven. [(ESAL-2.4) x miles]

Individual trip permit fee will be an “at cost” administrative fee (currently estimated to be $20) trip plus a per ESAL Mile fee (currently 7 cents). [$20+((0.07) x (ESAL-2.4) x miles)]
Single axles are defined as axles that not within 8 ft of another axle
Double or tandem axles are defined as 2 axles that are within 8 ft the other axle in
the group and are configured to distribute load weight uniformly across the group
(divisor is 33,200 lbs).
Triple or tridem axles are defined as 3 axles that are all within 8 ft of another axle
in the group and are configured to distribute load weight uniformly across the
group(divisor is 46,000 lbs).
Which basically means the more axles, the more you weight you can carry.
Minimum wheelbases to spread load, preferably with defined axle spacing for pre-calculated bridge compatibility
Minimum inner-bridge spacing: 36' (Sum of all wheel bases except the front axle)
Minimum outside wheelbase: 51' (Sum of all wheelbases)
Minimum of 5 axles 80,000 to 100,000 lbs.
Minimum of 6 axles over 100,000 lbs to 120,000 lbs.
The Gross Axle Weight (GAW) of the steering axles shall not exceed 17,600 or 800 lbs per inch of tire width measured at the flanges, whichever is less.

The GAW of the non steering axles shall not exceed 20,000 with the exception of one tandem axle group that may weigh 24,000 each or 48,000 total tandem, and 800 lbs of inch of tire width measured at the flanges, whichever is less.
Equipment Requirements

- Equipment requirements being considered to preserve safety and mobility aspects of permitting the travel of these loads:
  - Cannot exceed manufacturer’s specifications.
  - Axle tags affixed and legible.
  - Axles in combination groups must be within 2,000 lbs of the other axles in the group.

The permitted load on any axle shall not exceed the individual GAWR specified by the equipment manufacturer or sum of all tire ratings on the axle. All axles shall have manufactures axle tags affixed and legible. All truck/tractor power units shall have tandem or tridem rear suspensions. Each axle shall have fully functional brakes manufacture rated for loads at, or in excess of the permitted axle loads and perform in accordance with 49 CFR 393.52. The tractor shall be capable of pulling the permitted load at the legal speed limit of the route it is on. The individual axle weight in groups (tandems, tridems) shall not vary from others in same group by more than 2000 lbs. All tires shall be pneumatic and shall not be permitted to carry a weight greater than that marked on the sidewall of the tire.
New permits will apply to specified Interstate, US and state routes only. Local routes are to be permitted separately by local jurisdictions. A single trip permit is assigned to the truck/tractor power unit, per trip, per configuration, per route. Multi-trip permit available under 2.4 ESAL. This permit is truck and route specific. $20/permit administrative fee applies.
Indiana State Police and their Commercial Vehicle Enforcement Division will partner with the Indiana Department of Revenue and the Indiana Department of Transportation to ensure criteria are in compliance and fairly enforced.

Any permit violation will invalidate all privileges granted by the permit in its entirety and the load must be made legal prior to further movement. Permit violation(s) will disqualify the permittee from applying for a new permit for a specified period. Progressive measures are being considered to encourage uniform compliance.

ISP a few weeks ago observed 2 oversized loads that appeared to be overweight. An inspection of the trucks resulted in enforcement action and traffic tickets issued by ISP. An administrative fine by DOR and a suspension of permit privileges by INDOT for 30 days. We all take the overweight violations very seriously and are working together to provide safer highways for the public's usage as well as hold those who would take advantage or purposely circumvent the permit regulations accountable.
Thank you for your attendance.