Project Background, Problem Statement, Impact, & Sustainability
The objective of this project was to couple the PTO dynamometer and the Chassis dynamometer together. The Chassis Dyno was not equipped with data collection capabilities where the PTO Dyno does. Rotational force will be sent through the rollers on the chassis dyno, through a connecting shaft to the PTO dyno where data such as torque and horsepower can be seen and recorded. This project is to help impact the ABE Department by benefiting the Purdue 1/4 Scale Tractor Team and the PUP project in testing their vehicles at the wheels rather than just at the flywheel. This project may also be used as a demonstration piece in class. The project will go on to benefit the ABE department curriculum for many years to come to be used as a testing device and educational tool. The existing PTO shaft on the PTO Dyno was too short to use the hitching point and exceeded the 15 degree angle max on the Cardon Style u-joint knuckles.

Alternative Solutions
1. Purchase a longer PTO shaft and mount it on the PTO dyno to couple the two together.
2. Raise the Chassis dyno off of the floor to allow more acceptable u-joint angles.
3. Raise the PTO adapter on the chassis dyno by adjusting the belt power transfer mechanism.

Final Design
- Option 1 was the chosen course of action. It was both simple and robust and made the most common and economical sense.
- Purchased was a 54" collapsed, 80" max length, ASAE compliant 540 RPM PTO shaft capable of 35 horsepower. Given the Max horsepower of 35 and 6-spline quick connect rated 540 RPM, calculated max torque of 340 ft-lbs. Cost: $129.99

Project Constraints
- Budget – initial budget of $500, more can become available upon request, but was not needed.
- Time – Physical work on Project needed to be completed by 10 April, 2015.
- U-joint angles needed to be within the 15 degree maximum.
- Chassis Dyno needs to be secure to the floor in a position not in the way of the door or other equipment at the ADM building.

Project Schedule
- [Schedule details]

Project Schedule PTO Shaft

Project Background, Problem Statement, Impact, & Sustainability
The objective of this project was to couple the PTO dynamometer and the Chassis dynamometer together. The Chassis Dyno was not equipped with data collection capabilities where the PTO Dyno does. Rotational force will be sent through the rollers on the chassis dyno, through a connecting shaft to the PTO dyno where data such as torque and horsepower can be seen and recorded. This project is to help impact the ABE Department by benefiting the Purdue 1/4 Scale Tractor Team and the PUP project in testing their vehicles at the wheels rather than just at the flywheel. This project may also be used as a demonstration piece in class. The project will go on to benefit the ABE department curriculum for many years to come to be used as a testing device and educational tool. The existing PTO shaft on the PTO Dyno was too short to use the hitching point and exceeded the 15 degree angle max on the Cardon Style u-joint knuckles.

Alternative Solutions
1. Purchase a longer PTO shaft and mount it on the PTO dyno to couple the two together.
2. Raise the Chassis dyno off of the floor to allow more acceptable u-joint angles.
3. Raise the PTO adapter on the chassis dyno by adjusting the belt power transfer mechanism.

Final Design
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Project Constraints
- Budget – initial budget of $500, more can become available upon request, but was not needed.
- Time – Physical work on Project needed to be completed by 10 April, 2015.
- U-joint angles needed to be within the 15 degree maximum.
- Chassis Dyno needs to be secure to the floor in a position not in the way of the door or other equipment at the ADM building.

Project Schedule
- [Schedule details]