

# REDUCE FUEL CONSUMPTION WITHOUT SACRIFICING SPEED

Captains have the most control over fuel consumption through the way they use and manage engine throttles. Using patented technology, FUELTRAX assists the Captain in determining the optimal throttle settings for maximum vessel efficiency.

By applying fundamental laws of physics to real-time, as-it-happens measurements of consumption and speed, FUELTRAX calculates optimal throttle settings for the resultant forces acting against the vessel at that time. Because the relationship between speed and power is exponential for non-planning marine vessel hulls, significant gains in fuel efficiency can be attained for small reductions in speed.

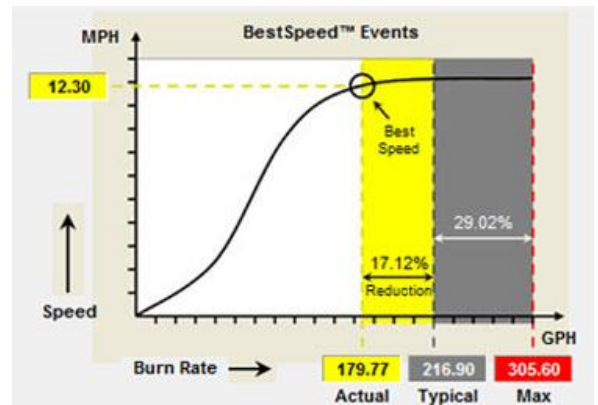
Consistent deployment of FUELTRAX throttle optimization routines provides real savings for customers whose vessels make short and long-haul voyages. The larger the vessel and the longer the voyage, the better the opportunity for fuel savings.

## BestSpeed™

BestSpeed throttle setting produces maximum vessel speed at the minimum required fuel consumption rate for the forces acting upon the vessel at that time. BestSpeed 'takes the slip out of the wheel,' and seeks the most economical fuel consumption rate needed to maintain vessel top speed.

When conditions change, such as an increasing favorable current, FuelTrax will alert the Captain to re-adjust throttles to capture additional fuel savings.

- Maximum speed with minimum fuel
- Takes the slip out of the wheel

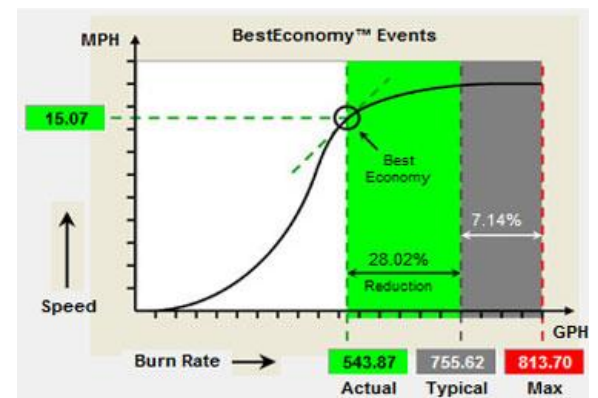


## BestEconomy™

BestEconomy throttle setting is the choice when the goal is to maximize fuel savings, and balance fuel consumption and speed, while taking into account the forces acting upon the vessel at that time.

The FuelTrax model will optimize the ratio of fuel consumed per unit distance traveled, while respecting vessel minimum speed requirements for the voyage.

- Maximize savings with small loss in speed
- Takes advantage of the exponential relationship between speed and fuel for marine vessels



FUELTRAX helps the Captain obtain the optimum throttle setting for each voyage, with BestSpeed and BestEconomy optimization software included as a standard feature in each FUELTRAX system.

Depending on the captain's selection, FUELTRAX will utilize real-time mathematical models onboard the vessel to determine the appropriate throttle settings.



## CASE STUDY: BestEconomy Saves 4.1% on Annual Fuel Spend

### LOCATION:

Gulf of Mexico

### TOTAL FLEET SIZE:

25

### VESSEL TYPES:

OSVs, PSVs, Crew Boats

### OPERATIONAL DATA:

18+ Months

### Challenge:

- Client needs to reduce total annual fuel spend in all areas of operations
- The largest amount of fuel is consumed by vessels operating in UNDERWAY MODE at 41.8% of annual fuel spend in 2015
- How can operations in UNDERWAY MODE be improved to deliver a reduction in fuel use?

Collecting accurate, direct measurements with Coriolis Mass Flow meters, FUELTRAX provides crucial insight on how fuel is used by the vessel. Fuel consumption data is combined with customized parameters in the FUELTRAX database, which allow fuel to be categorized into operational categories called "MODES."

FUELTRAX analysts can then study operational data in each MODE, and make recommendations for how to further optimize vessel operations within that MODE.

For this client, the top 4 operating MODES accounted for 80% of their annual fuel spend, with the remaining 5 MODES accounting for less than 20% of annual fuel spend

Since UNDERWAY MODE was the largest consuming MODE at 41.8% of the annual fuel spend in 2015, it was targeted for further optimization to make significant reductions in annual fuel spend.

**Solution:**

- Vessels using BestEconomy over 50% of the time while in UNDERWAY MODE saw larger savings than vessels using it less than 50% of the time
- Fuel savings are achieved through real-time throttle recommendations delivered to the Captain
- Utilization of BestEconomy was studied for each vessel, and best practices were replicated throughout the entire fleet

When the Captain activates BestEconomy onboard, the FUELTRAX system begins calculating the optimal throttle setting with the most minimal loss in speed. As the Captain reduces the throttle to the recommended setting, the system continuously reevaluates the optimal throttle setting to maintain that same speed while reducing the amount of fuel consumed.

**Results:**

- Increase in utilization of BestEconomy results in an average of 4.1% reduction in fuel consumption
- From Jan 1, 2016 – Aug 18, 2016:
  - Vessels using BestEconomy more than 50% of the time reduced consumption an average of 6.08%
  - Vessels using BestEconomy less than 50% of the time only reduced consumption by an average of 2.10%

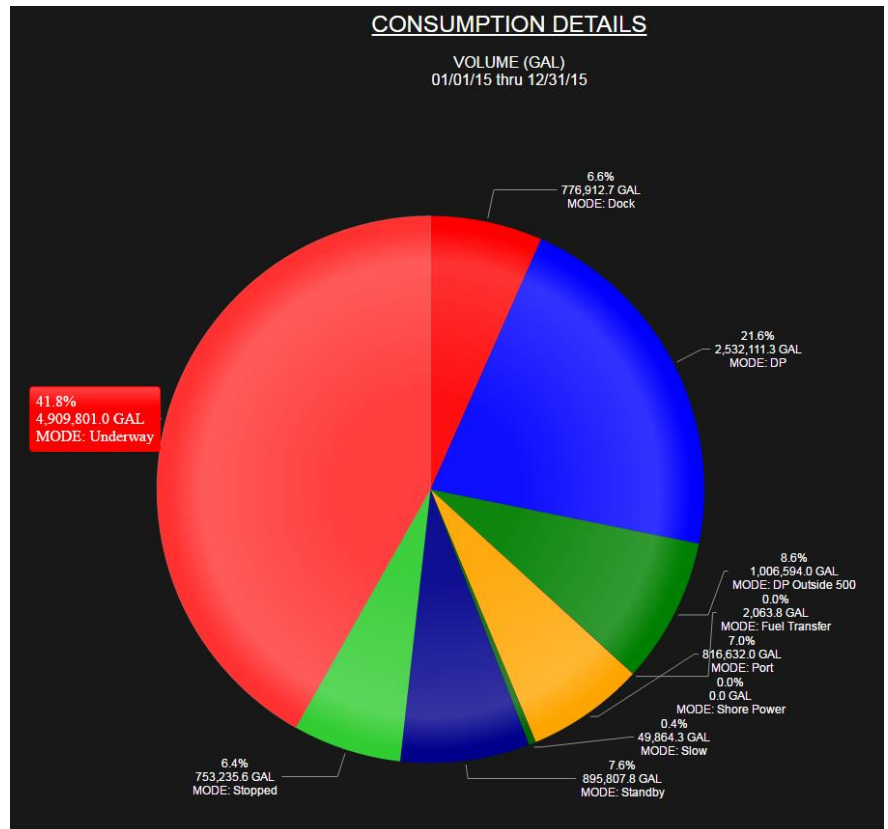


Figure 1: Annual Fuel Spend for 2015, per MODE. MODES are customizable in FUELNET and can be tailored to fit your operations.