

# Inactive States

GADS Wind Training Module 07

March 2019 – Final

**RELIABILITY | ACCOUNTABILITY**



- This module will review:
  - Dividing Time Review
  - The Purpose of the Inactive State
  - Inactive Reserve
  - Mothballed
  - Retired
  - Strategies

*Calendar Turbine Hours (CaTH)* **744 hrs.**

*Inactive Turbine Hours  
(ITH)* **44 hrs.**

*Active Turbine Hours (ACTH)* **700 hrs.**  
*Previously known as Period Turbine Hours (PDTH)*

**10 hrs.**  
*Inactive  
Reserve  
(IRTH)*

**30 hrs.**  
*Mothball  
(MBTH)*

**4 hrs.**  
*Retired  
(RTH)*

As a refresher, Calendar Hours can be broken down into 2 categories:

Active and Inactive Hours.

Inactive can be further broken down into 3 sub-categories:

**Inactive Reserve (IR)** – Cost too much to run

**Mothball (MB)** – May or may not be repairable

**Retired (RU)** – Never to run again

There are times, for various reasons, when it is necessary to remove turbines from the Active Turbine pool and put them in an Inactive state. There are 3 sub-categories – Inactive Reserve, Mothball and Retired

- Inactive Reserve is a form of RS. The turbines are capable of running but O&M cost or MWH rates make the plant costly to run. After 60 days of RS the turbines can be moved to Inactive Reserve.
- Mothball is a category where you are not sure if you will repair the turbine. Maybe the nacelle caught on fire and it takes a long time to investigate and determine repair cost. After 60 days of outage (Planned, Maintenance or Forced) a turbine can be put into this category.
- Retired – The turbine has reached the end of it's useful life. There is no waiting period.

Wind GADS Data Reporting Instructions (DRI) – “The purpose of these states is to remove plants or units from system availability when it is no longer financially viable to run the plant or unit for an extended period of time. For GADS, an extended period of time is defined at greater than 60 days.”

### Examples:

- Energy pricing drops below O&M cost
- O&M cost rise above income
- Environmental or regulatory constraints or cost
- Major equipment failure where time is need to determine the feasibility of making repairs

There are several, often misused terms in this definition:

- Financial – Anything can be defined in financial or economic terms. Sometimes repairs are delayed due to lack of funds, equipment, manpower, parts and etc. The plant is a business with the purpose of making money or the plant would not be in business long. The question is, is the plant capable of make a profit and not that repairs will be delayed.
- Extended – When Inactive was first introduced into GADS there was no waiting period defined. Some felt that 5 days was long enough and others 40 days. The system was being abused and plants were hiding EFOR behind the Inactive State. 60 days was decided as an appropriate waiting period.

### **Inactive Reserve (IR)** – Cost too much to run

1. Turbine or turbines can be restored to service with some maintenance because they have been idle for a while
2. They are not down due to component failures
3. Should be operable, not in outage, at the time the IR begins
4. Must be in Reserve Shutdown (RS) 60 days before moving to IR. RS is defined as negative energy pricing or lack of demand
5. Examples:
  - No wind during the summer. The plant shuts down for 4 months
  - Winter energy rates are very low. The plant shuts down for several months until the energy rate increases
  - O&M cost rise beyond income (negative energy pricing)

When putting a sub-group into Inactive Reserve shutdown, only those turbines capable of running can be changed. Turbines in outage, remain in outage until they are repaired or retired. See the discussion on Execution Delays in the OMC training module.

- **Mothball (MB)** – May or May not be Repairable
  1. Provides an evaluation period to define if repairs are feasible or if the unit should be retired
  2. May be brought back into service after some repairs
  3. Unit must be in outage (FO, MO, PO) for 60 days before it can be switched
  4. If repairs are started before the end of the 60 day period, the unit cannot be switched to Inactive Mothball
  5. Inspections or tear downs to determine root cause are not considered repairs
  6. If the turbine is in MB and the decision is made to repair the turbine, the turbine immediately reverts back to its original outage status. (New to the 2018 Wind DRI)
  7. The decision to repair is defined as management indicating that the turbine will be repaired, ordering parts or equipment, beginning tear down and etc.

The Inactive state Mothball can be technically challenging. It is a spot that is easy to hide EFOR if not used appropriately

- This category indicates that repairs are required. Therefore the turbine is in an outage state
- It must be in outage for 60 days prior to switching to Inactive > Mothball
- If repairs are started before the 60 day period the unit stays in outage and is not switched to Inactive > Mothball. Ordering parts, reserving equipment and prepping the turbine are all indications that the turbine is intended to be returned to service.
- If the turbine is in MB and the decision is made to repair the turbine, it immediately reverts back to its original state.
- Most of the time, repairs are going to be made to these turbine and will experience delays due to weather, equipment or material. Rather than trying to use and inactive state it would be better to us the External > Extended Downtime (OMC) category.
- Realize that using an Inactive category may at time worsen an indicator such as Forced Outage Factor (FOF) = FOH / Active Hours. Increasing the Inactive hours decreases the Active hours.

**Retired (RU) – Never to run again**

1. The unit will not return to service
2. No 60 day waiting period
3. Adjust the sub-group count and capacity at the first full month
4. Partial months are shown as Inactive Retired Hours
5. Remember all the hours need to add up to the number of hours in the calendar for the month

This status is often used during repower activities. Move turbines into RU when they will not be repaired, replaced or repowered.

## Various strategies that can be employed with the Inactive Status

1. Use Inactive when there is a major event that will take time to evaluate, determine root cause and cost to repair. This could be a turbine fire, tornado, earthquake etc. For those turbines you know you are going to fix but repairs are seriously delayed due to materials, weather or equipment being delayed, use the External > Delayed Repairs (OMC) | Forced category
2. If a site is going to be repower one or a group of turbines and a turbine fails a major component that will not be fixed, immediately retire it. When a turbine is turned off for repower, retire it

Repower can be as hard or as easy as you want to make it. The easiest path is to:

- Retire turbines as they are repowered or when major components fail that will not be repaired.
- Track retired hours until all the repower turbines have been turned off. At the first of the month retire the subgroup or adjust the sub-group record if all the turbines were not repowered.
- Create a new sub-group for the repowered turbines
- Start reporting the new sub-group the first full month of operation





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