



# I Have a Knowledge Management Tool, Now What

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Houston, 2<sup>nd</sup> of May 2013



# One of the largest Renewable Energy Companies

29 Wind Farms in 11 States generating over 3,800 Megawatt powering over 1M American Homes



# Industry Realities

During the first quarter of 2013, renewable energy accounted for 82% of new energy capacity in the US

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- Energy source mostly in remote areas
- Smaller scale than conventional energy assets
- Rapid improvements in technology
- Finding personnel with the technical skill set
- Energy source is intermittent (not continuously available)
- Increasingly complex regulatory requirements

# Company Challenges

We faced 2 years ago

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- No standard for prioritization of performance issues (what's most critical to work on right now?)
- Geographically dispersed portfolio
- Distance between sites and support functions makes constant knowledge flow difficult
- No standard or tool for storing institutional knowledge

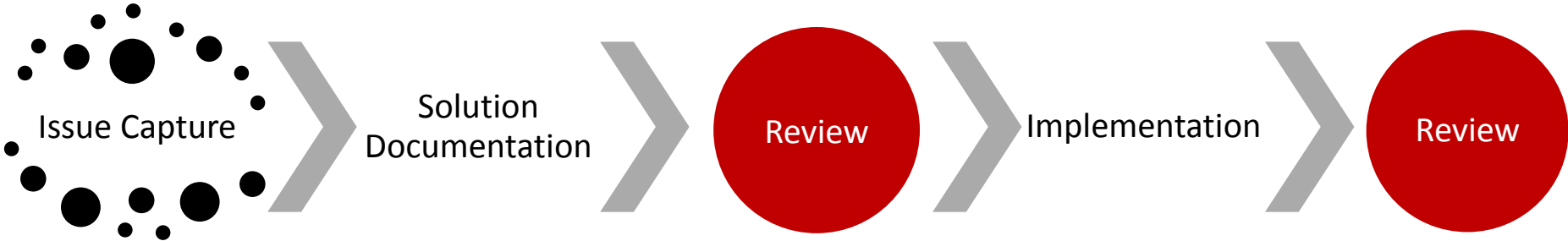


EDPR built COBRA (short form of Collaboration) to manage issue process and capture knowledge

# The COBRA Case Management System

Process

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# The COBRA Case Management System

## Knowledge base

**CM20110030**

Identification → Solution Documentation → Solution Review → Implementation → Implementation Review → Closed

**Case Details**  
 Case Type: Turbine Components  
 Case Title:  
 Requestor:  
 Solution Owner:  
 Component: Blade  
 Subcomponent: Blade A  
 Component Manufacturer: LM  
 Component Model:  
 Case Impact: Manufacturer/Model Level  
 Manufacturer(s) Affected:  
 Site(s) Affected:  
 # of WTCs Affected:  
 Case Description: suffered catastrophic blade damage and also nacelle cover damage due to over speed event observed on 02/17/2011.

**URGENT ATTENTION REQUESTED**  
 Urgency Description:  
 Applicable Firm Date:

**Solution Details**  
 Proposed Solution: Not Available  
 Solution Reviewers: No Reviewers Assigned Yet

**Solution SubTasks**

Title	Assignee	Status	Response Notes
		Pending	

**Implementation/Pilot Details**  
 Implementation Required: Yes  
 Implementation Owner: No Owner Assigned Yet  
 Implementation Comments: No Comments Available

**Case Progression History**

Task Name	Owner/Assignee(s)	Status	Start Time	Deadline/End Time	On Time
Sub Task Pending		Accepted	Jun 30, 2011 4:07 PM		
Document Solution		Accepted	Jun 17, 2011 3:15 PM		✓
Performance Analysis Review		Completed	Jun 17, 2011 3:14 PM	Jun 17, 2011 3:15 PM	✓
Add Notes		Completed	Jun 16, 2011 3:11 PM	Sep 20, 2011 2:52 AM	✓
Add Notes		Completed	Jun 16, 2011 3:11 PM	Oct 27, 2011 4:28 PM	✓
Add Notes		Completed	Jun 16, 2011 3:11 PM	Jan 30, 2012 3:16 PM	✓

**Left Update:**  
 Refresh Case Dashboard  
 Track Case on Social Feed  
 Document Library  
 Email Link to Case Dashboard

**Available Actions:**  
 Add Notes  
 Launch Data Request  
 Start Related Case  
 Update Case Details  
 Upload Case Document(s)

**Risk Priority Number (RPN) Scoring**  
 RPN Score: **565** (Max. Score: 1000)  
 Event Duration:  
 Event Frequency:  
 Dollar Impact:  
 COBRA Calculations:  
 Potential MW Impacted:  
 Average Site(s) NCF:  
 Average Site(s) \$/MWh:

**Uploaded Documents**  
 Identification Documents  
 Solution Documents  
 Review Documents

**Related Cases**

Case Number	Case Title	Requestor	Case Type
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# COBRA has already shown Value

Searchable knowledge base with detailed issue solutions, including context for decision making

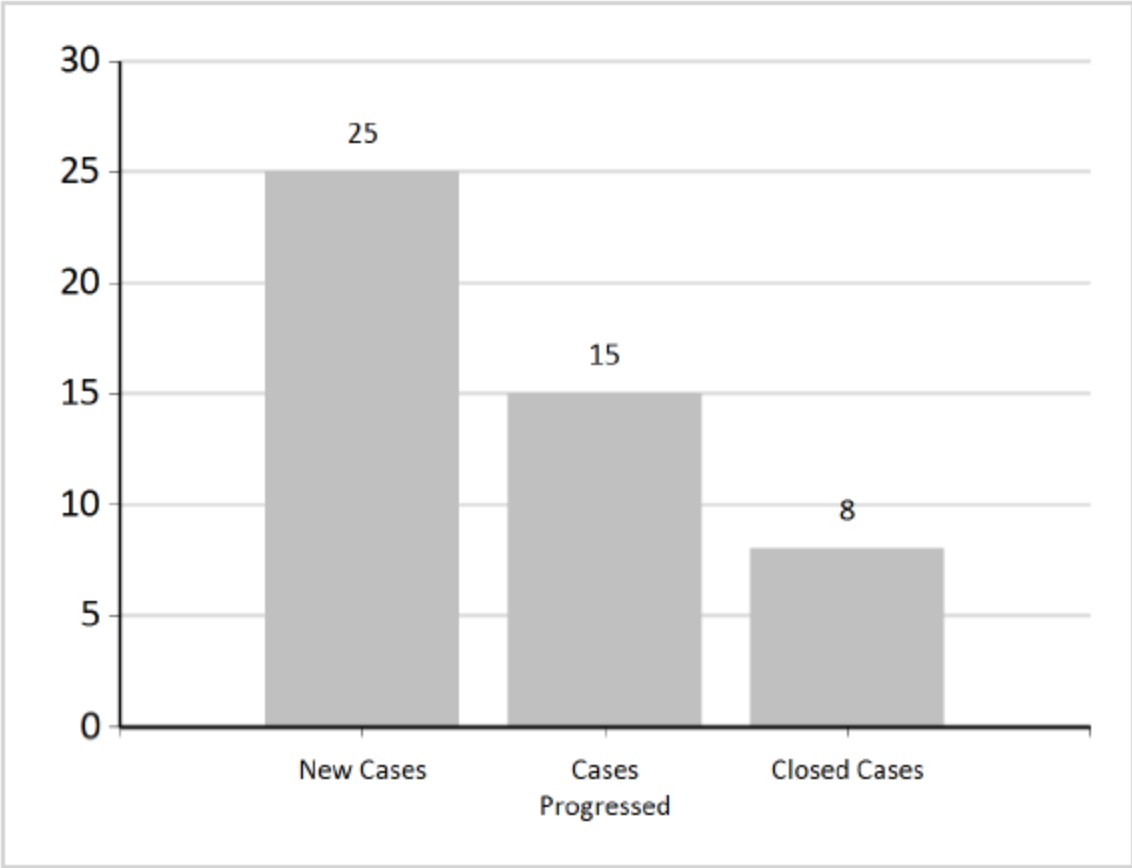
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**Over \$200M worth of issue solutions accessed over 6k times**

# Integration with Department Goals and KPIs

Progress since last meeting

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# Replacing Email with Social Media

Moving towards goal of reducing email issue tracking and email document sharing

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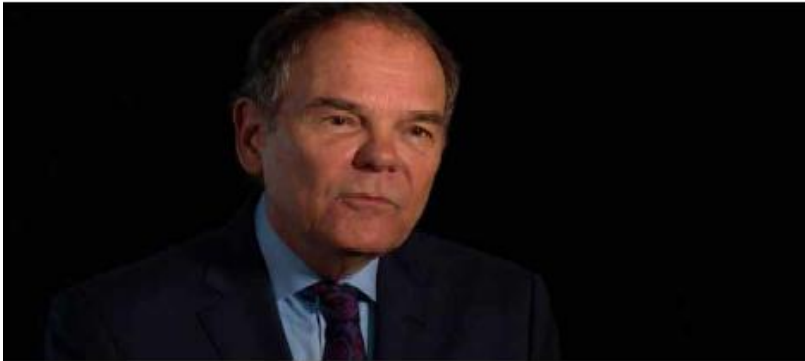


JANUARY 2013

ORGANIZATION PRACTICE

## Making internal collaboration work: An interview with Don Tapscott

The author and strategist describes why effective knowledge management within enterprises requires replacing e-mail with social media.



Source: McKinsey & Company



# Replacing Email with Social Media

## Email integration

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**CM20120361** has a new note: The generator issue was found to be a serial defect - the appropriate parties have been notified.

(received via email)

1 minute ago ☆ Comment Hide Info ▲

**Title** Generator Rotor Failure

**RPN Score** 389

**Dashboard** [http://cobra.corp.org/suite/apps/case\\_management/allCases/proc/536871125](http://cobra.corp.org/suite/apps/case_management/allCases/proc/536871125)



▶ **Everyone** EDPR,

I'm having trouble getting in touch with the Twin Groves wind farm regarding the small parts order. Does anyone know what the status is?

1 minute ago ☆ Comment



**PowerPulse** The new PowerPulse for 04 April has been posted.

A moment ago ☆ Comment Hide Info ▲

**PowerPulse: 04 April (PDF)** <http://cobra.corp.org/suite/doc/1333>

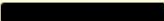
# Replacing Email with Social Media


## Notes



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- Notes primarily used a medium for case updates
  - 3 – 4 notes per active case

### Collaboration Notes Log

 - 2012-03-23 22:52

 Generator rotor winding analysis document posted to the case library. The RCA shows that the windings on the rotor have been severely damaged and will need replacement.

  added a new note to case CM20120361: The generator issue was found to be a serial defect - the appropriate parties have been notified.

A moment ago  [Comment](#) [More Info](#) ▾

# Replacing Email with Social Media

Knowledge engine automatically searches for similar cases to new entries

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### COBRA is checking for duplicate cases...

COBRA uses keywords from the Title entered to find potential duplicates. Please review the cases shown below to ensure that your case is not a duplicate.

#### Existing COBRA Cases

Case	Title	Case Type	Current Stage	RPN
CM20110219	Conduct Test of Turbine Pitch Optimization (TPO) Software	Turbine Control Software	Solution Documentation	63
CM20110194	BOP system check prior to over rating turbines	Turbine Control Software	Solution Review	75
CM20110188	Turbines Blown Line Fuses at During Grid Events	Turbine Components	Solution Documentation	295
CM20110139	Turbine Temp reduce power and gear oil level low stop	Faults	Solution Documentation	106
CM20110106	Develop system to track and take action on turbine warnings	Turbine Control Software	Closed	132
CM20110086	Pitch Manual & Turbine Manual	Faults	Solution Documentation	537
CM20120044	Power Curves on lower Efficient Turbines	Turbine Control Software	Solution Documentation	78



# Replacing Email with Social Media

## Transparency

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# Replacing Email with Social Media

Mobile

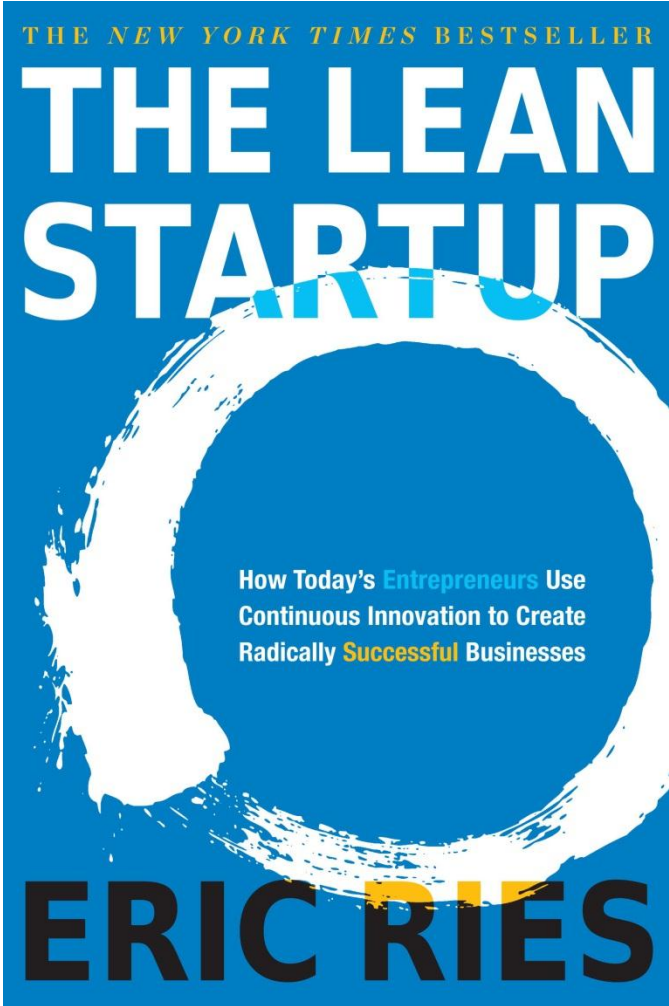
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# Applying LEAN techniques

Initial COBRA development took ≈3 months, future updates and extensions must be quicker

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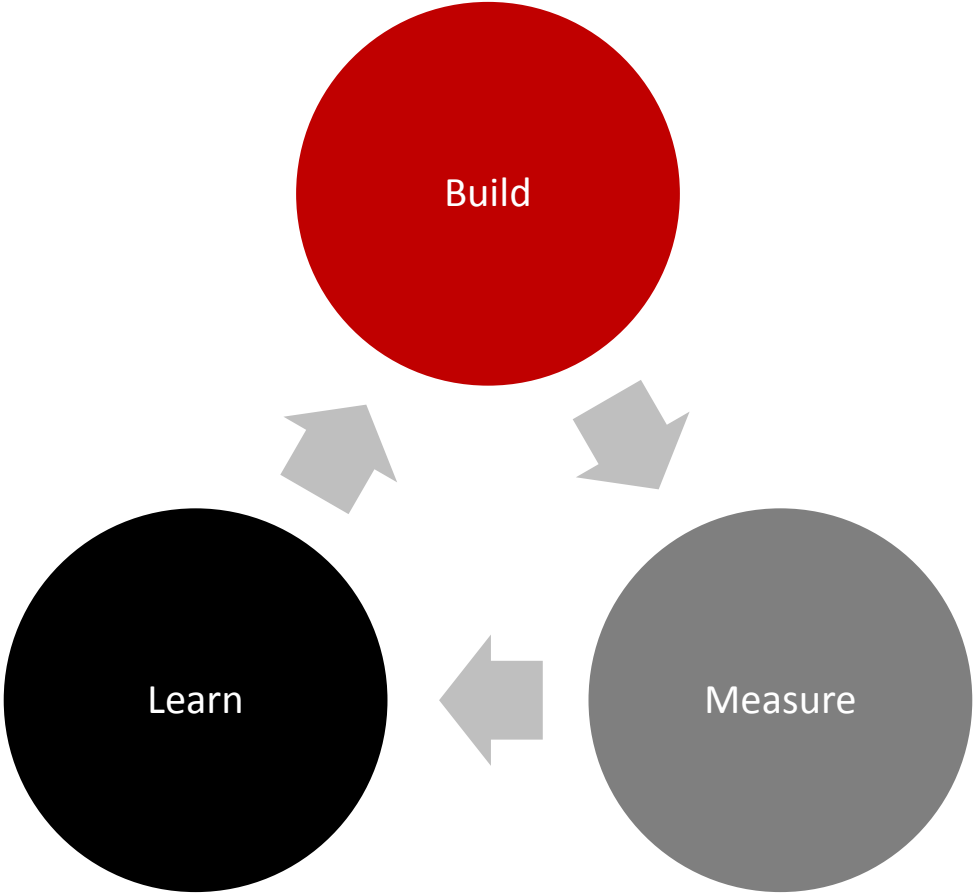


Source: The Lean Startup

# Applying LEAN techniques

Being effective with minimal resources

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# Applying LEAN techniques

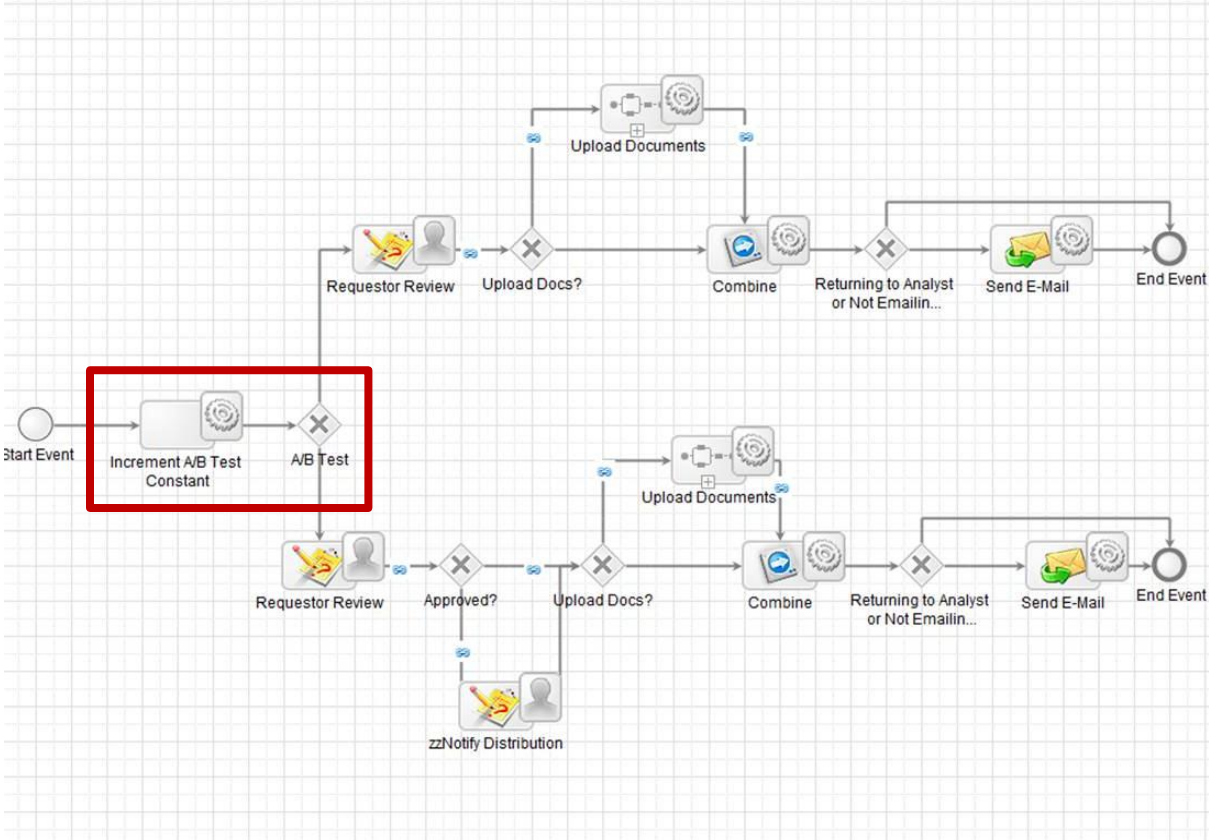
Creating a minimum viable product

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# Applying LEAN techniques

## A/B tests



# Applying LEAN techniques

## UX design



Source: Apple



# Applying LEAN techniques

Using design principles to improve UX

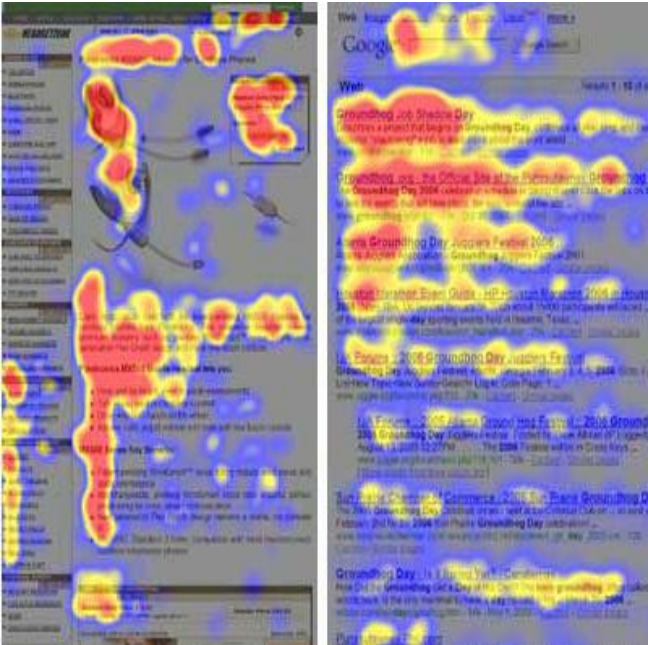
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Source: Domestic

# Applying LEAN techniques

## The F-shaped pattern



Source: Nielson Norman Group



EA20130150 - PMM location for

Request Issued → Acquiring Data/Analysis → Review → Closed

Available Actions

- Cancel Request EA20130150
- Reassign Responsible Analyst for Request EA20130150
- Request More Information for Request EA20130150
- Update Details for Request EA20130150
- Upload Documents for Request EA20130150

Data Request Details


Title: PMM location for  
Requested by:  
Request Type: Other  
Due Date: 4/8/2013  
Site(s) Affected:

Description: Please find a suitable permanent met tower location for [redacted] utilizing the attached available lands Shapefile.

Nabeel Khabazi Comments: Closing request.

Review

Current Tasks for Data Request

Started	Any Time	Status	Active		
<input type="checkbox"/>	Task Name	Owner	Assigned	Status	Completed
<input type="checkbox"/>	Requestor Review			Accepted	

Direct Link to Request Dashboard

You can send this link to others to directly bring them to this request dashboard:  
[http://idcprprod001.corp.org:8080/suite/apps/case\\_management/allCases/proo536873802](http://idcprprod001.corp.org:8080/suite/apps/case_management/allCases/proo536873802)





# Applying LEAN techniques

Make it easy to stay

**New Request** **Safety Events** **Env. Events** **Turbine QAQC**

Turbine QA Actions

 **Turbine QA** 

Windfarm:  Turbine Type:  Turbine #:  Inspector 1:

Inspection Type:  Start Date:  Last Service Date:  Inspector 2:

Tower Base | **Lower-Mid Tower** | Upper-Mid Tower | Top Tower | Nacelle | Gearbox | Generator | Hub | Summary | Progress

# Applying LEAN techniques

## Getting to the next step

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### Thank you for your submission

Please click on the button below to continue to the request dashboard, where you can check status and to see who is currently responsible for handling your request

#### Current Process Steps

Please note that the analyst responsible for performing your request can change based on resource availability. Check the request dashboard for the latest information. You will be emailed when the status of this request changes.

#### Current tasks for

Request Title	Project Name	Type of Analysis	Requestor	Due Date
100 MW NCF Production Estimate fo		Production Estimate (NCF)		04/18/2013
Bid		Production Estimate (NCF)		04/15/2013
NCF Report		Production Estimate (NCF)		04/10/2013
Suitability Analysis Package		Data Package		04/10/2013
Suitability Analysis and NCF Report		Production Estimate (NCF)		04/10/2013



# Applying LEAN techniques

Make actions reversible

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**Available Actions**

-  **Cancel Request EA20130174**
-  **Reassign Responsible Analyst for Request EA20130174**
-  **Request More Information for Request EA20130174**
-  **Update Details for Request EA20130174**
-  **Upload Documents for Request EA20130174**



# Applying LEAN techniques

Offer a way out

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Event Cost / Dollar Impact

**What is the estimated cost incurred due to this event?\***

- Loss of Production only
- Less than \$10,000 (Small-sized part: eg. sensors, circuit board)
- \$10,000 - \$50,000 (Medium-sized part: eg. motor, IGBT)
- \$50,000 - \$100,000 (Main Component does not requires rotor drop)
- Greater than \$100,000 (Main Component requires rotor drop)

Please use the tabs below to break down the Dollar Impact (USD) of the case.

<b>Energy Loss</b>	Labor Cost	Materials Cost
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Please specify the Energy Loss impact (EUR)

Save Changes and Close

Continue making Changes



# Lessons Learned

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1. Ensure Knowledge Management is integrated into your everyday work
2. Keep solutions as intuitive for the end users as possible
3. Replace email with social media
4. Apply LEAN techniques

# Thank You!

Blue Canyon Wind Farm, Lawton Oklahoma

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