



The Cost of Poor Quality



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Common Language

What is quality?



- Quality is doing agreed upon requirements and standards
 - Not high quality, not low quality, not good quality, not bad quality
 - Either you did or you did not

Quality is Free

- No one has lost money doing the job right the first time
- We lose money by actions that involve not doing jobs right the first time
 - It cost us:
 - Loyal and satisfied customers
 - Market share
 - Profit



Poor Quality Cost

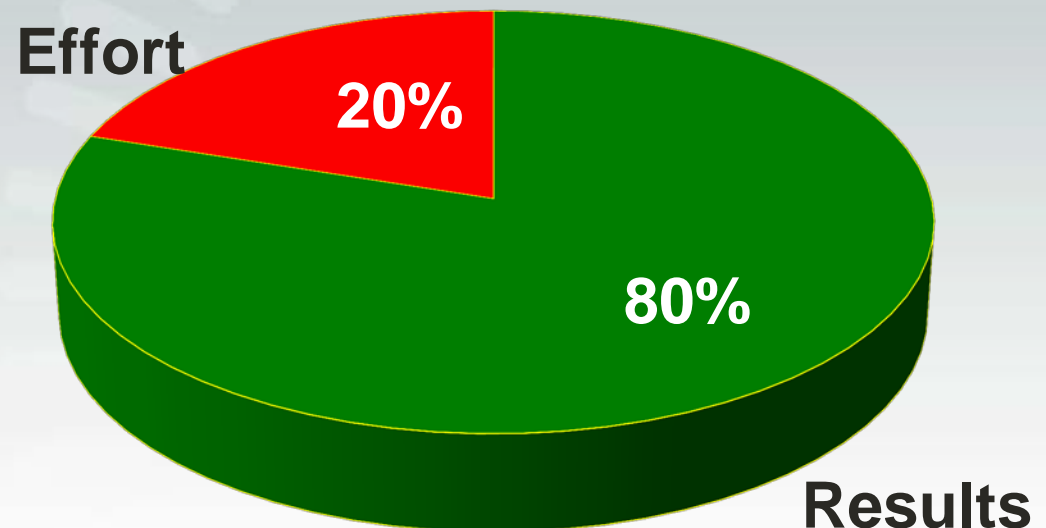
Waste: Anything that consumes resources and does not add value to the end product

1. Rework
2. Waiting (on material or people)
3. Transportation (to and from work)
4. Motion (back and forth to the truck, cycle time)
5. Process (poor, to much, to little)
6. Inventory (to much, to little)
7. Failing to use the intellect of employees

Cost of poor quality is actually the cost of doing things wrong

80/20 Thinking

- 80% of results come from 20% of effort
- 80% of defects result from 20% of causes
- 80% of value is produced with 20% of resources
- 80% of defects can be eliminated by correcting 20% of causes



You say....."Show Me the Money!"



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What is the Cost of Poor Quality

How much does missed weather-stripping for an attic hatch cost you as a contractor?

To figure this out, first you must know what your real expenses are on a day to day basis. Next you need to understand the different consequences of a defect and apply your costs.

STEP 1

Identifying Loss

List Cost Areas of Doing Business

COST AREAS OF DOING BUSINESS								
Cost Area	Billing Rate	Cost /yr.		Cost to Business : work days 21			Cost to Business : month days 30	
	\$/Hour	\$/yr	\$/Month	\$/Day	\$/Hour	\$/Month	\$/Day	\$/Hour
Labor - Management	\$100.00	\$70,000.00	\$5,833.33	\$277.78	\$34.72	\$5,833.33	\$194.44	\$24.31
Labor - Office		\$50,000.00	\$4,166.67	\$198.41	\$24.80	\$4,166.67	\$138.89	\$17.36
Labor - Sales		\$70,000.00	\$5,833.33	\$277.78	\$34.72	\$5,833.33	\$194.44	\$24.31
Labor - crew leader	\$75.00	\$50,000.00	\$4,166.67	\$198.41	\$24.80	\$4,166.67	\$138.89	\$17.36
Labor - crew member	\$65.00	\$40,000.00	\$3,333.33	\$158.73	\$19.84	\$3,333.33	\$111.11	\$13.89
Payroll taxes		\$39,200.00	\$3,266.67	\$155.56	\$19.44	\$3,266.67	\$108.89	\$13.61
Total Labor		\$319,200.00	\$26,600.00	\$1,266.67	\$158.33	\$26,600.00	\$886.67	\$110.83
Office Rent or Mortgage		\$24,000.00	\$2,000.00	\$95.24	\$11.90	\$2,000.00	\$66.67	\$8.33
Truck Maintenance		\$6,000.00	\$500.00	\$23.81	\$2.98	\$500.00	\$16.67	\$2.08
Truck Insurance		\$7,200.00	\$600.00	\$28.57	\$3.57	\$600.00	\$20.00	\$2.50
Gas		\$10,000.00	\$833.33	\$39.68	\$4.96	\$833.33	\$27.78	\$3.47
Tools and Equipment		\$3,000.00	\$250.00	\$11.90	\$1.49	\$250.00	\$8.33	\$1.04
Tool Maintenance		\$500.00	\$41.67	\$1.98	\$0.25	\$41.67	\$1.39	\$0.17
Office Supplies / Software		\$2,000.00	\$166.67	\$7.94	\$0.99	\$166.67	\$5.56	\$0.69
Computers Repairs		\$1,500.00	\$125.00	\$5.95	\$0.74	\$125.00	\$4.17	\$0.52
Legal Fees		\$1,000.00	\$83.33	\$3.97	\$0.50	\$83.33	\$2.78	\$0.35
Accounting		\$2,500.00	\$208.33	\$9.92	\$1.24	\$208.33	\$6.94	\$0.87
Licensing, Bond & Certificat.		\$1,000.00	\$83.33	\$3.97	\$0.50	\$83.33	\$2.78	\$0.35
Health Insurance		\$21,000.00	\$1,750.00	\$83.33	\$10.42	\$1,750.00	\$58.33	\$7.29
Workers Comp Insurance		\$3,500.00	\$291.67	\$13.89	\$1.74	\$291.67	\$9.72	\$1.22
Lost Production		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Marketing & Advertising		\$10,000.00	\$833.33	\$39.68	\$4.96	\$833.33	\$27.78	\$3.47
Printing		\$1,000.00	\$83.33	\$3.97	\$0.50	\$83.33	\$2.78	\$0.35
Phone - cell		\$3,600.00	\$300.00	\$14.29	\$1.79	\$300.00	\$10.00	\$1.25
Phone & Internet		\$1,500.00	\$125.00	\$5.95	\$0.74	\$125.00	\$4.17	\$0.52
Professional Fees / Desgin		\$1,000.00	\$83.33	\$3.97	\$0.50	\$83.33	\$2.78	\$0.35
Postage and Delivery		\$240.00	\$20.00	\$0.95	\$0.12	\$20.00	\$0.67	\$0.08
Security		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Dues & Subscriptions		\$200.00	\$16.67	\$0.79	\$0.10	\$16.67	\$0.56	\$0.07
Sanitation		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Liability Insurance		\$3,250.00	\$270.83	\$12.90	\$1.61	\$270.83	\$9.03	\$1.13
Meals		\$2,000.00	\$166.67	\$7.94	\$0.99	\$166.67	\$5.56	\$0.69
Utilities		\$1,200.00	\$100.00	\$4.76	\$0.60	\$100.00	\$3.33	\$0.42
Building Repairs		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Expenses (no labor or materials)		\$107,190.00	\$8,932.50	\$425.36	\$53.17	\$8,932.50	\$297.75	\$37.22



Fill in all yellow areas

COST AREAS OF DOING BUSINESS

Cost Area	Billing Rate	Cost /yr.	Cost to Business : work days 21			Cost to Business : month days 30		
	\$/Hour	\$/yr	\$/Month	\$/Day	\$/Hour	\$/Month	\$/Day	\$/Hour
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Fill in all yellow areas

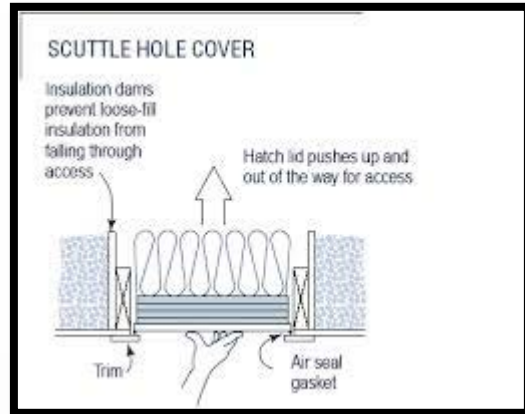
Step 1.
Identify the different costs you have in your business

Step 2.
Fill in your labor costs

Step 3.
Fill in direct costs and expenses

Step 4.
Add up your labor costs and annual expenses to see how much revenue you need during a typical work day/week to cover all costs

Example: What does it cost to go back and weather strip an attic hatch?



STEP2

Quantify Loss

Calculating the Cost Of Poor Quality (COPQ)

The Cost of Poor Quality (COPQ)

"The cost of poor quality consists of all costs that would disappear if there were no deficiencies." J.M. Juran



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Individual Incidents					
Error or Defect	Effect	Cost / Effect	Frequency	Net Cost	Cost / error
Problem	Admin	Insert Cost	Number	Cost*	Add
Waste	Re-work		of Effects	Frequency	Net Costs
Inefficiency	Extra				
	Material				
	Lost				
	Production				
	Legal Fees				
	Etc.				
1.	2.	3.	4.	(calculated)	(calculated)

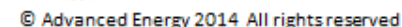
Lost Revenue Per Year			
Annual activity rate	Error freq.	Errors / yr	cost of error
Ex: Houses Per Year	How often error occur?	Activity*freq	Cost/error*errors/year
	(percent)		
5.	6.	(calculated)	(calculated)

All green areas require your input

1. Insert any defect, inefficiency, etc.
2. Insert all consequences that are related to this issue
3. Insert estimated cost of each effect or step
4. Insert frequency of each effect
5. Insert total number of houses you work on each year
6. Insert estimated percentage of homes with this issue

"The cost of poor quality consists of all costs that would disappear if there were no deficiencies." J.M. Juran

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[illegible]

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Waste	Re-work		of Effects	Frequency	Net Costs
Inefficiency	Extra Material				
	Lost Production				
	Legal Fees				
	Etc.				
1.	2.	3.	4.	(calculated)	(calculated)

Lost Revenue Per Year

Annual activity rate	Error freq.	Errors / yr	Total EST. cost of error
Ex: Houses Per Year	How often error occur?	Activity*freq	Cost/error* Per Year
	(percent)		
5.	6.	(calculated)	(calculated)

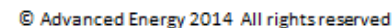
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4. Insert frequency of each effect
5. Insert total number of houses you work on each year
6. Insert estimated percentage of homes with this issue

Ex: Return trip to weather strip an attic hatch	Quality assurance call from Program				
	Scheduling				
	Rework				
	Truck expenses and mileage				
	Lost production				
	Document & report				
	Customer care call				

2. Insert all consequences that are related to this issue.

"The cost of poor quality consists of all costs that would disappear if there were no deficiencies." J.M. Juran




3. Insert what you consider the cost of this consequence.

The Cost Areas Worksheet helps populate these cells with your own numbers.

1. Insert any defect, inefficiency, etc.
2. Insert all consequences that are related to this issue
3. Insert estimated cost of each effect or step
4. Insert frequency of each effect
5. Insert total number of houses you work on each year
6. Insert estimated percentage of homes with this issue

**See COPQ
example in
Quality Support
Package**

COST AREAS OF DOING BUSINESS



advanced energy

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Fill in all yellow areas

Cost Area	Billing Rate	Cost /yr.	Cost to Business: work days 21			Cost to Business: month days 30		
	\$/hour	\$/yr	\$/month	\$/month	\$/day	\$/month	\$/month	\$/day
Labor - Management	\$100.00	\$70,000	\$5,883.33	\$5,883.33	\$277.78	\$5,883.33	\$5,883.33	\$277.78
Labor - Office		\$100,000	\$8,333.33	\$8,333.33	\$396.81	\$8,333.33	\$8,333.33	\$396.81
Labor - Sales		\$70,000	\$5,883.33	\$5,883.33	\$277.78	\$5,883.33	\$5,883.33	\$277.78
Labor - crew leader	\$75.00	\$50,000	\$4,166.67	\$4,166.67	\$198.41	\$4,166.67	\$4,166.67	\$198.41
Labor - crew member	\$40.00	\$20,000	\$1,666.67	\$1,666.67	\$78.19	\$1,666.67	\$1,666.67	\$78.19
Payroll taxes		\$36,250	\$3,020.87	\$3,020.87	\$143.86	\$3,020.87	\$3,020.87	\$143.86
Total Labor		\$219,250	\$18,060.00	\$18,060.00	\$856.83	\$18,060.00	\$18,060.00	\$856.83
Office Rent or Mortgage		\$24,000.00	\$2,000.00	\$2,000.00	\$95.24	\$2,000.00	\$2,000.00	\$95.24
Telephone		\$6,000.00	\$500.00	\$500.00	\$23.81	\$500.00	\$500.00	\$23.81
Truck Insurance		\$6,000.00	\$500.00	\$500.00	\$23.81	\$500.00	\$500.00	\$23.81
Gas		\$10,000.00	\$833.33	\$833.68	\$40.46	\$833.33	\$833.33	\$39.78
Tools and Equipment		\$10,000.00	\$2,000.00	\$2,000.00	\$95.24	\$2,000.00	\$2,000.00	\$95.24
Tool Maintenance		\$500.00	\$41.67	\$1,988.25	\$94.67	\$41.67	\$1,988.25	\$94.67
Office Supplies / Software		\$2,000.00	\$166.67	\$1,674.40	\$79.99	\$166.67	\$1,674.40	\$79.99
Computer Repairs		\$1,000.00	\$125.00	\$1,250.00	\$60.98	\$125.00	\$1,250.00	\$60.98
Legal Fees		\$1,000.00	\$83.33	\$537.50	\$25.90	\$83.33	\$537.50	\$25.90
Accounting		\$2,000.00	\$2,008.33	\$99.02	\$12.42	\$2,008.33	\$99.02	\$12.42
Licensing, Bond & Certificate		\$1,000.00	\$83.33	\$83.33	\$3.97	\$83.33	\$83.33	\$3.97
Health Insurance		\$21,000.00	\$1,750.00	\$883.33	\$42.00	\$1,750.00	\$883.33	\$42.00
Workers Comp & Insurance		\$30,000.00	\$2,500.00	\$1,189.59	\$57.14	\$2,500.00	\$1,189.59	\$57.14
Lost Production		\$10,000.00	\$833.33	\$833.33	\$39.68	\$833.33	\$833.33	\$39.68
Marketing & Advertising		\$15,000.00	\$1,250.00	\$1,250.00	\$60.98	\$1,250.00	\$1,250.00	\$60.98
Printing		\$1,000.00	\$83.33	\$83.33	\$3.97	\$83.33	\$83.33	\$3.97
Phone - cell		\$4,000.00	\$500.00	\$14,239.19	\$71.79	\$500.00	\$14,239.19	\$71.79
Phone & Internet		\$3,000.00	\$125.00	\$5,995.74	\$28.54	\$125.00	\$5,995.74	\$28.54
Professional Fees / Design		\$1,000.00	\$83.33	\$500.00	\$23.81	\$83.33	\$500.00	\$23.81
Transport and Delivery		\$240.00	\$20.00	\$20.00	\$1.21	\$20.00	\$20.00	\$1.21
Damage & Security		\$1,000.00	\$50.00	\$50.00	\$2.38	\$50.00	\$50.00	\$2.38
Safety		\$200.00	\$16.67	\$16.67	\$0.79	\$16.67	\$16.67	\$0.79
Sanitation		\$5,000.00	\$50.00	\$50.00	\$2.38	\$50.00	\$50.00	\$2.38
Supplies		\$3,000.00	\$275.89	\$12,900.00	\$61.43	\$275.89	\$12,900.00	\$61.43
Liability Insurance		\$2,000.00	\$166.67	\$77.78	\$3.70	\$166.67	\$77.78	\$3.70
Utilities		\$1,200.00	\$100.00	\$4,731.60	\$23.00	\$100.00	\$4,731.60	\$23.00
Vehicle Expenses		\$10,000.00	\$833.33	\$833.33	\$39.68	\$833.33	\$833.33	\$39.68
Total Expenses		\$397,100.00	\$32,893.50	\$46,256.36	\$2,196.17	\$32,893.50	\$46,256.36	\$2,196.17

The Cost of Poor Quality (COPQ)

"The cost of poor quality consists of all costs that would disappear if there were no deficiencies." J.M. Juran

Individual Incidents						Lost Revenue Per Year			
Error or Defect	Effect	Cost / Effect	Frequency	Net Cost	Cost / error	Annual activity rate	Error freq.	Errors / yr	Total EST. cost of error
						Ex: Houses Per Year	How often error occur? (percent)	Activity* freq	Cost/error* Per Year
Problem	Admin	Insert Cost	Number of Effects	Cost*	Add				
Waste	Re-work			Frequency	Net Costs				
Inefficiency	Extra Material								
	Lost Production								
	Legal Fees								
	Etc.								
1.	2.	3.	4.	(calculated)	(calculated)	5.	6.	(calculated)	(calculated)
Ex: Return trip to weather strip an attic hatch	Quality assurance call from Program	\$6	1	\$6	\$201				
	Scheduling	\$9	2	\$18					
	Rework	\$60	1	\$60					
	Truck expenses and mileage	\$15	1	\$15					
	Lost production	\$90	1	\$90					
	Document & report	\$6	1	\$6					
	Customer care call	\$6	1	\$6					

\$201

4. Insert how many times this consequence happens for this defect, inefficiency, etc.

The cost of each consequence will automatically be calculated, along with the total cost of the defect.

All green areas require your input

1. Insert any defect, inefficiency, etc.
2. Insert all consequences that are related to this issue
3. Insert estimated cost of each effect or step
4. Insert frequency of each effect
5. Insert total number of houses you work on each year
6. Insert estimated percentage of homes with this issue

The Cost of Poor Quality (COPQ)

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Individual Incidents

Error or Defect	Effect	Cost / Effect	Frequency	Net Cost	Cost / error
Problem	Admin	Insert Cost	Number of Effects	Cost*	Add
Waste	Re-work			Frequency	Net Costs
Inefficiency	Extra Material				
	Lost Production				
	Legal Fees				
	Etc.				
1.	2.	3.	4.	(calculated)	(calculated)

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	Document & report	\$6	1	\$6	
	Customer care call	\$6	1	\$6	

Lost Revenue Per Year

Annual activity rate	Error freq.	Errors / yr	Total EST. cost of error
Ex: Houses Per Year	How often error occur? (percent)	Activity*freq	Cost/error* Per Year
5.	6.	(calculated)	(calculated)
286			

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5. Insert the number of houses you do per year.

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	Scheduling	\$9	2	\$18	
	Rework	\$60	1	\$60	
	Truck expenses and mileage	\$15	1	\$15	
	Lost production	\$90	1	\$90	
	Document & report	\$6	1	\$6	
	Customer care call	\$6	1	\$6	

Lost Revenue Per Year

Annual activity rate	Error freq.	Errors / yr	Total EST. cost of error
Ex: Houses Per Year	How often error occur? (percent)	Activity*freq	Cost/error* Per Year
5.	6.	(calculated)	(calculated)
286	40%	114	\$22,914

All green areas require your input

1. Insert any defect, inefficiency, etc.
2. Insert all consequences that are related to this issue
3. Insert estimated cost of each effect or step
4. Insert frequency of each effect
5. Insert total number of houses you work on each year
6. Insert estimated percentage of homes with this issue

If this loss did not exist it would be pure profit, a new truck, vacation to Tahiti, down payment on a foam rig, etc.

\$22,914

6. Insert what you feel is the percentage of houses having this problem.

The annual cost of this defect to the company will automatically be calculated.

Cost of Poor Quality – Attic Hatch

	Number of Homes/Jobs Annually	Number of Homes with Defect	Cost of Poor Quality \$/House	Total Loss
Attic Hatch Not Weather Stripped	286	114	\$201	\$22,914
<i>Total Annual Loss from Missed Weather-stripping</i>				\$22,914

However, companies always have more than one issue. The cost of poor quality changes dramatically when you consider multiple issues...

Cost of Poor Quality – Multiple Issues

	Number of Homes/Jobs Annually	Number of Homes with Defect	Cost of Poor Quality \$/House	Total Loss
Attic Hatch Not Weather Stripped	286	114	\$201	\$22,914
Missed Floor Air Sealing	286	69	\$216	\$14,904
Re-insulate Wall Cavities	286	10	\$2300	\$23,000
Total Annual Loss				\$60,818

\$212.93

Loss per house

\$315.53

Loss per house
done wrong

The quality path leads to greater profits

Thank you!

If you are an Energy Trust Existing Homes trade ally interested in more information please contact the Trade Ally Team at:

866-365-3526

ExistingHomesTA@energytrust.org