

Green Lean:

Achieving Outstanding Environmental Performance With Lean

SCENE 1.

CG: FBI warning  
white text centered on black to blue  
gradient

WARNING

Federal law provides severe civil and  
criminal penalties for the unauthorized  
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Society of Manufacturing Engineers

SCENE 2.

SME logo, with music

SCENE 3.

GL open, with music

MUSIC UP AND UNDER

SCENE 4.

Green Lean: Achieving Outstanding  
Environmental Performance with Lean

B-roll on the outside of the plant,  
perhaps some additional materials of  
putting cars together.

NARRATION (VO):

THIS PROGRAM, GREEN LEAN: ACHIEVING  
OUTSTANDING ENVIRONMENTAL PERFORMANCE WITH  
LEAN; SHOWS HOW SUBARU INDIANA AUTOMOTIVE USED  
ITS LEAN IMPROVEMENT SYSTEM TO ACHIEVE  
BREAKTHROUGH ENVIRONMENTAL PERFORMANCE. THE  
LESSONS LEARNED CAN HELP ANY MANUFACTURER  
BECOME A BETTER ENVIRONMENTAL STEWARD.

SCENE 5.

Alan and Dean

06.07.00 - 06.08.37

Interview

Dean: One of the hottest things in  
business today is green—companies trying  
to be more environmentally friendly. But  
what does that really mean? And, does it  
pay for itself? A company might start out  
by collecting cardboard and plastic and  
recycling them, or aluminum cans. Or if

they're really going to get fancy, they might move on to an environmental management system, something like ISO 14000, which looks at the entire footprint of the company. But is this really getting us anywhere? It's just scratching the surface of what is possible; it's a mere add-on to what is already done.

Alan: What if you could get every employee involved in daily improvement activities that reduce environmental impact? That is what has happened here at Subaru Indiana Automotive, which produces almost 1000 cars a day, has a workforce of around 3500 people, and get this—it produces less trash in a year out of this plant than the average family of four does in one day. How does this happen? What's happening here is what we call green lean. It is what happens when you take your engine and you turn it on to green. Think about what lean means. Lean means mass employee involvement in constant daily kaizan or continuous improvement activities. When you turn an engine like that onto green, you get some amazing results, and that's what we're going to see here today.

SCENE 6.

Appropriate background b-roll with the following appearing on the screen in order

- ✓ 1<sup>ST</sup> to be ISO 14000 certified (1998);
- ✓ 1<sup>ST</sup> with a solvent recovery system with a dry still bottom (2002);
- ✓ 1<sup>ST</sup> designated with as a backyard wildlife sanctuary (2003)
- ✓ 1<sup>ST</sup> to achieve **zero landfill**

**NARRATION (VO) :**

SUBARU HAS LED THE AUTOMOBILE MANUFACTURING INDUSTRY WITH A NUMBER OF IMPORTANT ENVIRONMENTAL FIRSTS. THEY WERE:

FIRST TO HAVE ITS ENVIRONMENTAL MANAGEMENT SYSTEM TO BE ISO FOURTEEN THOUSAND CERTIFIED; FIRST TO DEVELOP A SOLVENT RECOVERY SYSTEM WITH A DRY STILL BOTTOM;

(2004)

Second list rolling out one at a time

Since 2000, SIA has reduced:

- ✓ Waste per vehicle by 41%
- ✓ Waste discharged per vehicle by 99.4%
- ✓ Toxic chemical released per vehicle by 54%
- ✓ Natural gas usage by 16%; and
- ✓ Electricity usage per vehicle by 25%

FIRST TO HAVE MUCH OF ITS PROPERTY DESIGNATED AS A BACKYARD WILDLIFE SANCTUARY BY THE NATIONAL WILDLIFE FEDERATION;

AND FIRST TO ACHIEVE ZERO LANDFILL

SINCE 2000, THEY HAVE:

REDUCED WASTE GENERATED PER VEHICLE BY FORTY ONE PERCENT.

REDUCED THE WASTE DISCHARGED PER VEHICLE BY NINETY NINE POINT TWO PERCENT.

REDUCED TOXIC CHEMICAL RELEASED PER VEHICLE BY FIFTY FOUR PERCENT

LOWERED NATURAL GAS USAGE BY SIXTEEN PERCENT; AND

CUT ELECTRICITY USAGE PER VEHICLE BY TWENTY FIVE PERCENT.

THIS PERFORMANCE IS THE RESULT OF A GREEN JOURNEY THAT BEGAN VERY EARLY.

SCENE 7.

Tom Easterday  
Senior Vice President  
Subaru of Indiana Automotive

3:00.43.20 - 3:01.15.29

The whole green journey here at SIA has been very interesting. I like to say that it started even before the plant was built. Most sites, they would clear the entire site before construction would begin. But our parent company saw fit to actually preserve a lot of natural areas on our site. That's how eventually our 832-acre site became designated as a backyard natural habitat by the National Wildlife Foundation. Early on we preserved some of those areas so we could show that manufacturing could live in harmony with nature. So I'd like to say

the start was even before we came into existence.

**0:32/3:42**

SCENE 8

Easterday

3:07.45 - 3:08.07

...We did this because it was the right thing to do. Even though there is a great series of commercials that Subaru of America has had on television for the past year about our environmental efforts, those efforts have been going on for 14-15 or more years. We became zero landfill in May of 2004, and the marketing of our green efforts didn't start until 2007.

**0:22/4:04**

SCENE 9

3:08.18 - 3:08.33.25

Easterday

Subaru has always been an environmentally conscious company. The demographics of the typical Subaru buyer fit very well—environmentalists, people that love the outdoors, people that love outdoor sports, camping, hiking. So it has fit very well, our efforts, with the demographic of the typical Subaru buyer.

**0.15/4:19**

SCENE 10

B-roll of recycling

2:28.20-2:28.30

4:52.57-4:53.03

**NARRATION (VO) :**

SUBARU BEGAN MODESTLY WITH SIMPLE AD HOC ACTIONS INCLUDING THE RECYCLING OF CARDBOARD, ALUMINUM CANS, AND SOME PLASTICS, AND THE REDUCTION IN THE USE OF ENERGY.

SCENE 11

Denise Coogan  
Manager, Safety + Environmental  
Compliance  
Subaru of Indiana Automotive

5:36.23 - 5:36.50

There is really nothing unique about our program, it is just a series of small, incremental steps that has led to our success. As we call them here, they're kaizans, continuous improvement. We started out very small recycling pop cans and pop bottles and newspapers. From there our associates just embraced the program and got on board, and we've gone to recycling everything we can possibly get a hold of.

SCENE 12

b-roll production shot  
perhaps 1:24.18-1:24.37

**NARRATION (VO) :**

SUBARU'S AD HOC APPROACH BECAME MORE  
SYSTEMATIC IN THE LATE 1990S WITH THE ADOPTION  
OF AN ENVIRONMENTAL MANAGEMENT SYSTEM THAT WAS  
ISO FOURTEEN THOUSAND CERTIFIED. THIS HELPED  
SUBARU TO IDENTIFY AND MEASURE ITS  
ENVIRONMENTAL IMPACT, WHICH IN TURN ALLOWED  
MANAGEMENT TO TARGET ENVIRONMENTAL ISSUES.

SCENE 13

Brent Lank  
Senior Product Specialist  
Subaru of Indiana Automotive

5:12.58 - 5:14:20

The process really started with our  
quality management system and with the ISO  
9001 that came out in 1987. In 1994 the  
decision was made that we were going to  
pursue ISO 9001, and we saw a lot of  
benefits to the structure of the  
management system, and having everybody on  
the same program. So when the ISO 14000  
program came out in 1996, we really looked  
at the benefits we could use to enhance  
our environmental systems at that time.  
Even though they were very infant, we were  
doing some things that were beneficial to  
the environment, but we wanted to grow  
that system and make it a lot stronger.  
In 1997 the decision was made to go ahead  
with the implementation of ISO 14001. The  
interesting thing was, at that time there  
were not the resources available that  
there are today. There was not a lot of  
books out, there weren't people you could  
call up and say "how are you doing this."  
It was a lot of sitting down and  
scribbling, flipping coins as we call it,  
and basically going around the room and  
sometimes just doing a consensus on what  
people thought. We made a lot of mistakes  
along the way, but we learned a lot along  
the way as well, and certainly now today  
with the amount of resources out there,  
and the internet, and other companies, it  
certainly has become a lot easier to do

that type of system.

SCENE 14

**NARRATION (VO) :**

b-roll of painting cars if available  
or 1:11.52-1:12.03

THE ISO FOURTEEN THOUSAND PROCESS HELPED TO IDENTIFY ENVIRONMENTAL "HOT SPOTS". ONE OF THESE WAS THE VOLUME OF TOXIC SOLVENT BEING USED TO FLUSH THE PAINT SYSTEM BETWEEN COLOR CHANGES.

SCENE 15

David Carriere  
Engineer  
Subaru of Indiana Automotive

In the paint process, we paint approximately four to five vehicles the same color. Then we change the color, purge the lines, and start over with a different color. So it's possible on any given day to have 60 to 100 color changes that creates purge waste that comes to the still building.

(Speed all of Dave's interviews to either 1.15 or 1.20 times the normal speed - believe it - it makes a very nice difference)

1:17.10 - 1:17:35

SCENE 16

David Carriere

1:16.24 - 1:17.04

There are huge environmental risks with solvent. It only takes a couple gallons to ruin thousands and thousands of gallons of water. The transportation of this product to an off-site processor presents a risk, albeit a managed risk. There is still a probability that something could happen. The management decided that rather than accept that risk, we would be better served to have the process here, so we didn't have to run the risk of taking the material to an outside vendor, having it reconstituted, and then transporting it back.

SCENE 17

**NARRATION (VO) :**

b-roll on still process

1:11.24-1:11.36

1:23.31-1:23.39

1:22.14-1:22.24

SUBARU INDIANA AUTOMOTIVE WORKED HARD TO DEVELOP ONSITE PAINT SOLVENT DISTILLATION. AT THE TIME, MANY STILLS LEFT A TOXIC SLUDGE IN THEIR BOTTOMS THAT NEEDED TO BE TRUCKED TO AN

INCINERATION FACULTY. HOWEVER SUBARU EMPLOYED A UNIQUE VACUUM DISTILLATION PROCESS THAT EXTRACTED ONE HUNDRED PERCENT OF THE SOLVENT, LEAVING A TOXIC-FREE DRY STILL BOTTOM. THIS DRY MATERIAL IS USED BY STEEL MAKERS.

SCENE 18

David Carriere

1:19.28-1:19.52.15

**0:21/8:54**

Because we were able to run this system, we have been able to dramatically reduce the amount of inbound loads of purge solvent. The best way I can describe it to you, before the still building was up and operational, we would average 4 to 6 tanker trucks a month. Now we average one tanker truck every quarter.

SCENE 19

Three sections of b-roll

4:54.30-4:54.50 Line Assembly

4:11.57-4:12.10 Transmission Assembly

1:50:15 - 1:50.32 Meeting

**NARRATION (VO) :**

IN 2002 SUBARU MOVED TO THE NEXT MAJOR STAGE OF ITS GREEN JOURNEY - ONE THAT SET IT APART FROM MOST COMPANIES. TOP LEADERSHIP COMMITTED TO THE AMBITIOUS GOAL OF ACHIEVING ZERO LANDFILL BY 2007. THIS REQUIRED INTEGRATING ENVIRONMENTAL MEASURES AND ACTIONS IN EVERYONE'S DAILY ACTIVITIES.

**0:50/9:44**

GETTING THE FULL SUPPORT AND INVOLVEMENT OF THE PEOPLE ON THE FRONT-LINE WAS CRITICAL. THEY ARE THE ONES WHO MUST DEAL WITH THE WASTE, AND THEY ARE IN THE BEST POSITION TO SEE AREAS FOR IMPROVEMENT.

FORTUNATELY, SUBARU HAD A STRONG LEAN CULTURE. FRONT-LINE EMPLOYEES WERE ENGAGED IN IMPROVEMENT ACTIVITIES THROUGH THEIR TOTAL PRODUCTIVE MAINTENANCE AND KAIZEN PROCESSES.

SCENE 20

An environmental program is something that

Easterday

3:18.17 - 3:19.13

**0:56/10:40**

all of your associates can be excited about. It's difficult to go out there and say gosh, team, we really need to cut costs, or gosh we really need to do this or that. Certainly you can get people fired up about creating a safer vehicle, they can internalize that. They want their vehicle to be safe, and we build one of the safest vehicles out there, if not the safest. Quality, you can get them excited about quality, because they know that sells cars in the market. But environmental programs are really something people can see and realize. The safety of a car, we know that's built into it. Quality, you can kind of see that, but there's a lot of very good vehicles out there right now. Environmental efforts, they're obvious, and people really can see that, can apply that at home, and can understand that. It's something you can really get your hands on. So it gets people excited, and it makes them proud of the company they work for.

SCENE 21

Denise Coogan

5:30.30- 5:31.09

**0:39/11:19**

Having the front line people involved is one of the critical key steps to a successful program. There are a few key steps. Having upper management support, having associates on board with it, and in our case, having someone help us with our byproduct management, someone actually physically here to help us manage the commodities that we recycle. Those are the three key things. But if I had to choose one of the three, the associates being able to come up with the ideas, being able to go out and they do the recycling, they do the primary sorting for us, all that has been really key to the program.

Scene 22

Jim Myers

TPM Manager

Subaru of Indiana Automotive

Our TPM program started back in 1995 and really we just looked at equipment. We looked at uptime and how to maintain the equipment and keep it running. That's really what we focused on for several years. Then we evolved into looking at other areas of the business, how do we stay competitive? So we started looking

4:10.48 - 4:11.34

at safety, quality and cost and scrap. Then in August of 2002 we looked at environmental, and we brought that on board and that really took off. I think because of the years of kaizaning and improving our equipment, it was a very easy transition into the environmental part of the business.

**0:46/12:05**

SCENE 23

**NARRATION (VO) :**

4:09.24-4:09.31

IMPROVEMENT IN ENVIRONMENTAL PERFORMANCE IS

**0:07/12:12**

NOT LEFT TO CHANCE. GOALS ARE SET; PERFORMANCE

IS MEASURED; AND PEOPLE ARE HELD ACCOUNTABLE.

SCENE 24

Easterday

3:15.17 - 3:16.13

We definitely have specific goals from corporate. Actually those goals follow right down through the organization. Each section within our company has a goal for their environmental activities, for their energy reduction, energy usage reduction, and so forth. Those goals are also part of every manager's performance review. Some companies call them KPI's, we call them KRA's, or key results areas. Each manager has a goal for the environment that they must meet as a part of their performance review. It's also part of our management bonus program, that our overall corporate goals must be met with regard to the environment. We've always been known for our safety, both in the products we build, and also we have the safest workplace in the United States for the last five years. Those are a major part of our KPI's also, but environmental is right there with them. We have to meet those environmental targets as part of our performance reviews.

Cut in b-roll on charts

4:07.24 - 4:08.17

4:08.56 - 4:09.10

**0:56/13:08**

SCENE 25

**NARRATION (VO) :**

Still picture of Fuji Kaizen Award

**0:15/13:23**

ASSOCIATES HELP THEIR TEAMS REACH PERFORMANCE GOALS BY OFFERING IMPROVEMENT IDEAS. IN 2006, SUBARU INDIANA AUTOMOTIVE WON FIRST PRIZE IN A GLOBAL KAIZEN IDEA COMPETITION WITHIN ITS PARENT COMPANY, FUJI HEAVY INDUSTRIES.

SCENE 26

The name of our project was the Horror of IPD. We chose that because IPD, which is

Ross Konrad  
Group Leader  
Subaru of Indiana Automotive

in-process damage, is almost like a ghost, it comes in and it leaves. You don't know where it came from, sometimes it takes a long time to find. That's why we incorporated the horror in there. But the real horror of IPD is the fact that Subaru spent over \$123,000 in a 3-month period repairing those defects, which were chips, dents, and scratches. Those made up about 92 percent of the in-process damage.

6:26.20 - 6:27.08

**0:48/14:11**

SCENE 27

cut

Ross Konrad

6:27.45 - 6:28.11

**0:26/14:37**

SCENE 28

Ross Konrad

6:28.19 - 6:29.10

***While Ross is talking in this scene and the next, we should keep the audio flowing but switch the video to b-roll of the cars on the line protected. The best footage for this is 4:54.12 to 4:55.54.***

~~We actually had, I think it was 78 ideas, that help us reduce IPD. I've got a couple of favorites, and they're simple. Kaizans don't have to be big, huge, \$10,000 kaizans. They're the small things, the things the associates can see, and can see the fruits of their labor right there at their station. One, we were having trouble with chips on our hood from our windshield wiper install. We looked at protecting the wrench and a few other ideas, and what we came up with, we simply took a piece of an old air hose, sliced it, and we would insert that onto the hood where the wrench would contact, and no more chips.~~

**0:51/15:28**

SCENE 29

Ross Konrad

6:30.44 - 6:31.00

We actually had an 86 percent decrease in IPD over the course of our kaizan project. That saved the company an annual savings of \$465,000 with that kaizan.

**0:14/15:42**

SCENE 30

**NARRATION (VO):**

THE GOAL OF ZERO LANDFILL RESULTED IN SOME INTERESTING TACTICS.

**0:04/15:46**

SCENE 31 Denise Coogan

**Dumpster Dive**

5:32:17 - 5:32:48:20

**0:31/16:17**

We always like to say we got started dumpster diving. We literally went dumpster diving. We actually turned over the gondolas of trash and put them in piles, separated them out by commodity, and then went looking for someone who could take that commodity for us. Things we couldn't find a recycler for, we just decided we would try to get with our vendor and see if they could change the product they were sending us, the packaging material. If they could, then that was all the better.

SCENE 32

b-roll on welding and on sparks being recycled (identified more footage than can be used)

1:59.29-2:00.30,

1:57.40 - 1:58.06, and

4:26:34-4:26:48

**0:35/16:52**

**NARRATION (VO) :**

ONE OF THE INTERESTING CHALLENGES IN GOING TO ZERO LANDFILL WAS FIGURING OUT WHAT TO DO WITH THE SPARK DUST FROM THE WELDING PROCESS. RATHER THAN SWEEPING IT UP AND THROWING IT AWAY, THE SWEEPINGS WERE SHIPPED TO SPAIN, WHERE A COMPANY PROCESSED THEM TO RECOVER THE COPPER. BUT SUBARU WENT EVEN FURTHER. IT WORKED TO REDUCE THE AMOUNT OF SPARKS GENERATED BY REDRESSING THE COPPER WELDING TIPS. THIS NOT ONLY RESULTED IN FEWER SPARKS, BUT IT ALSO RESULTED IN:

-BETTER WELDS,

-SEVENTY FIVE PERCENT FEWER WELDING TIPS CONSUMED,

-AND A SAVINGS IN THE AMOUNT OF ELECTRICITY USED.

SCENE 33 Tip Dressing Footage  
Alex Horvath  
Production Engineer  
Subaru of Indiana Automotive

...you start out with a six-millimeter tip face on most tips, that's optimal welding condition. Through the heat and pressure of welding, the tip face mushrooms out and

1:26.44 - 1:27.17

Cut from Alex to the following with him rolling the tip in his hand

1:31.42 - 1:31.48

1:33.17 - 1:33.26

**0:33/17:25**

sometimes the tip is no longer, it doesn't weld anymore, because that tip face is too large and we lose some of the current density. There's two things you can do. You can up the amperage, which is wasting electricity. Or you can cut that face back to a 6-mm tip face using the same current. You can get good welds all the time that way.

SCENE 34

**NARRATION (VO) :**

Graphic of the waste hierarchy

SUBARU USES WHAT IS CALLED THE WASTE HIERARCHY TO COMMUNICATE AND FOCUS ITS ENVIRONMENTAL EFFORTS. COMMONLY REFERRED TO AS THE 3-RS OF WASTE MANAGEMENT - REDUCE, REUSE, AND RECYCLE - THE HIERARCHY IS EASY WAY TO REMEMBER AND A GOOD WAY TO FOCUS EVERYONE'S ATTENTION ON WHERE TO GET THE MOST ADVANTAGE FROM THEIR ENVIRONMENTAL EFFORTS.

**0:22/17:47**

SCENE 35 Denise **Reduce**

5:39.34 - 5:40.17

**0:43/18:30**

They always say that environmental programs are too expensive to put in, but not when you consider the entire program. You get the biggest bang for your buck, so to speak, in reducing the amount of waste you generate. If you don't have to pay to bring it in, you don't have to pay to have someone handle it while it's here, and you don't have to pay to have it disposed of. That's where your big savings will be. ~~So we always strive to reduce the amount of material that we generate here. We've gone from 459 pounds per unit in 2000 to the end of 2007 we were at 251 pounds per unit, about a 45 percent reduction in the amount of waste we generate, which is where our savings really is in our environmental program.~~

SCENE 36

Rick Geller  
Senior Manager  
Subaru of Indiana Automotive

Almost every one of those ideas come from those front line associates. The front line associates are the ones that generate the ideas. We go out with categories and

1:07.29 - 1:08.03

we ask them, how can we reduce this category. You work with it every day, so what can we do to reuse it, recycle it, or to reduce it. ~~Reduce is the very first thing we want to do. If we reduce it, that improves everything. If we can't do that, then how do we reuse it or how do we recycle it.~~

SCENE 37

Denise **Reuse**

5:40.17 - 5:40.45

Then if we can't reduce it, if we absolutely have to have it brought in, then the thing we want to do next is reuse it in some way. It's always best to reuse it in the original way it was meant, so we reuse a lot of Styrofoam, a lot of packaging that is sent back to Japan. That material has been sent back many times back and forth. We continue to reuse it and we continue to save money with that project, about a \$1.3 million per year savings on just that one project from the engine plant.

**0:28/19:35**

SCENE 38

Rick Geller

1:06.31 - 1:07.22

...we started to recycle some Styrofoam blocks, packing materials. At first we thought it was going to be very difficult to take this recycled material and get it back onto containers and get it back to our suppliers, some of those suppliers being in Japan. It took a while for everybody to sit down and come up with which products were really going to affect how could we package those up in a manner in order to get them back to the supplier. That recycling back there on that one we thought was going to be a one-piece element, that turned into I believe 75 or 80 packaging materials throughout the facility that ended up being repackaged and returned to the supplier to improve our recycling capability on those products and reduce our overall waste.

**0:51/20:23**

SCENE 39

Denise **Recycle**

5:40.45 - 5:41.11

Then if we can't reduce it and we can't reuse it, then of course we recycle it. We recycle everything. 99.8 percent of what we generate is recycled. That two tenths percent that's left over is our hazardous waste that we thermally incinerate and it's disposed of by law. That's how we look at the three R's—

**0:26/20:49**

reduce, reuse, recycle, and in that order.

SCENE 40

NARRATION (VO):

**0:13/21:02**

TO BRING IN THE EXPERTISE NEEDED TO IDENTIFY SOURCES FOR PROCESSING WASTE SUBARU PARTNERED WITH ALLEGIANT GLOBAL SERVICES. ITS STAFF PROCESSES ALL MANUFACTURING BY PRODUCTS ON SITE.

SCENE 41

Matt Green  
Program Manager  
Allegiant Global Services

4:17.57 - 5:18.26

Subaru signed us to help with their waste reduction projects in 2002. We started with some of the basic stuff. First we figured out by doing literal dumpster diving what they had, and what of that could be recycled. We started with the biggest project first. Which ones would make the most impact. Obviously steel was the quickest and easiest to do. But after that, we started with things like paper and cardboard, things that everybody knows are easily recyclable. From paper and cardboard, once we got past that we went to what's next.

4:18.33 - 4:18.50

The next step then of course was the plastic. Starting from something as small as the plastic bumpers all the way to just the plastic sheeting that comes on the interior parts there. Every one of those pieces can be recycled. As soon as we separate them out and figure out how to get them, then we go ahead and process them and send them to other recyclers.

4:18.56 - 4:19.13

...some of the styrofoams, some of the foams are what comes after that. Some of the other kinds of plastic that aren't the simple, clear plastic that everybody can recycle. Now we need to find the more difficult plastic, some of the different blends, different polymers, we started finding ways to separate those and get those to the recycler.

...we're down to this, which is actually a pop rivet stem. It's a very small piece of aluminum, weighs a fraction of an ounce. So it's very hard for us to collect these within the general metal population, because you can't exactly suck these out with a magnet. So what happens, what they used to do with a pop rivet system, it goes in with a pneumatic gun, so they were worried about safety and it flying out everywhere. We were worried about capturing every little piece we possibly could to make sure it gets recycled and stays out of the landfill. We started with a couple different ergonomic proposals that actually the Subaru associates, the ones actually putting these things in, actually came up with. First was to just kind of capture them so they weren't flying through the air and taking somebody's eye out. They came up with a little bag capture system on the end of the gun that would shoot it into there and then they'd have to empty the bag. It created an ergonomic problem, ~~because that would get kind of heavy after a while, even though these are aluminum. It also became a little unwieldy, hard for them to hit their spots when they needed to hit their spots.~~ Now they've got a system that works almost like you would see at a bank teller if you went through the drive-thru. You put the canister in there with your money and it suctions it out and goes where it needs to go. Same type of system. They've got a vacuum tube attached to the gun, and that suctions it all the way back and it drops in a bucket. From that bucket we're able to collect it, separate it, and recycle it.

SCENE 42

NARRATION (VO):

b-roll nature footage

WITH THE HELP OF ASSOCIATES, SUBARU REACHED ITS ZERO LANDFILL GOAL TWO YEARS EARLY. WHILE

**0:11/23:24**

THIS WAS A MAJOR MILESTONE, SUBARU HAS NO  
PLANS TO END ITS GREEN JOURNEY.

SCENE 43

Matt on Composting

04:40.57 - 4:42.23

"...zero landfill, as we like to say around the office, is "so two years ago." We've been doing it for so long that it's actually not much of a challenge for us anymore, so we need to continually worry about what's next. Larger scale projects that will keep Subaru on the cutting edge of environmental stewardship. Things like green roofing. Things like phydo remediation, which is using plants to naturally take the pollutants out of wastewater instead of things like chemicals and mechanical processes. Actually our next big project here involves composting and worms.

As you see down here, this is a Canadian Red Wiggler, the thoroughbred of the worm, Mother Nature's best recycler. What we'll do is help that process along by keeping it fed and keeping it in a nice place to stay. How this typically works right now in the pilot stages is, we'll have them over here, we'll lead them someplace else with food. They will eat their way through the pile, leaving behind the vermiculite, the good stuff, the HGH for plants. They'll keep moving on through the food process, we'll just keep leading them on with food. In an industrial setting such as Subaru, where you have 3500 employees eating in the cafeteria, two or three meals a day, we envision something a little bigger. It's not going to have to be huge, it's not going to have to be like a football field, but we'll just keep leading the worms around the ring, going to the next pile of food, leaving behind the black and white gold, which we'll use on Subaru's grounds to keep up their natural landscaping, or even do something like give it away to the associates for their own homes and gardens.

SCENE 44

b-roll nature shots split with  
financial statement?

**0:09/24:52**

**NARRATION (VO) :**

SUBARU'S GREEN LEAN PROGRAM DELIVERS  
IMPRESSIVE ENVIRONMENTAL RESULTS. BUT MOST  
PEOPLE ASK THEMSELVES, DOES IT MAKE BUSINESS  
SENSE? WHAT ARE THE BENEFITS TO THE COMPANY?

SCENE 45

Denise

5:46.51- 5:48.50

I believe knowing our processes well to understand the waste we're generating, to understand what it is we're doing to the environment, has helped us understand our processes more. It has helped us cut costs in other areas. A small example of one would be, we wanted to reduce the amount of waste we were generating in cardboard in the materials shop. So now instead of having a full lid on a box, it's just four flaps that come down and the middle of the box is open. That way, that amount of cardboard isn't there, we're not generating that amount of weight for that box, and also we don't have to use a utility knife now to open that box. We can just fold up the flaps. So we reduce our safety accidents from lacerations, and we've also reduced the amount of waste generated. The associates on the floor, the managers in production, have a very intimate awareness of the entire process. We have the benefit of being a very small company in the big scheme of things. In the auto industry we're relatively small. So it makes it a little easier, we're a little flatter organization and communication is much easier for us back and forth. We can talk and kick ideas around with the engineers and people on the floor and managers, and they can actually take us out there. We can actually go see the process, and we look at it with different eyes. I look at it from an environmental and safety standpoint, Becky looks at it from an environmental standpoint, the Allegiant people look at it from a waste standpoint, the engineers look at it as a process. The managers look at it as how will this impact my budget, how will this impact my costs, how will this impact my labor. So

we get all together with those different sets of eyes looking at things, and together we come up with some pretty good ideas that can reduce costs, improve quality and decrease the impact we have on our environment, and also improve our safety record.

SCENE 46  
Easterday

3:17.06 3:17.25

**0:19/27:17**

Too many companies think, well there's a cost to this, we just can't afford it right now, or we don't have the time to do it. If you do it right, it can actually save you money and in addition to that, it can become part of your everyday processes, so it doesn't require that much additional resources to make this happen.

SCENE 47  
Dean Schroeder and Alan Robinson

6:15.44 - 6:18.34

So at the end of this day, what have we learned. First of all, to be truly Green Lean, you have to involve everyone, from the bottom of the organization to the top, in constantly improving, in ways big and small, your environmental impact.

Absolutely Alan, it's the people on the front line that are touching the products, touching the waste, that can see it. They're the ones that can come up with ideas on identifying it, saving it, and also, we have to make it easy for them, so they can just reach out and drop it in the right spot, separating it at that point.

Another learning for Subaru has been that as you go through this process, you gain deep process understanding. You understand the full flow of products, including after they've been used—the waste stream. This knowledge allows you to improve in safety, in productivity, in quality, in cost, in areas that you could never have anticipated if you had never taken the environmental perspective.

Absolutely, and our macro numbers show that. Look at our statistics. Not only do we have one of the greenest auto plants in the world, if not the greenest, we have the safest plant in North America; their quality is rated top by JD Power this past year; and their productivity is not a slouch either, they're a pretty productive plant.

So here's some tips for what you need to do when you start the Green journey. First of all, make sure, as at Subaru, that your leadership is strongly behind this program. Too many leaders view environmental things as a compliance thing or a marketing thing, and they don't do much, but they use the green term in their marketing. Subaru has very strong leadership from the top. The mandate came down, we want to be a zero landfill company, and the leadership backed it, and that's one reason it has worked so well.

And with that direction, they drove it down the front line, starting with those little ideas from the people on the front line. Involving everyone in that process and training them, not just in recycling, but the three R's—the reduce, reuse, recycle. Everyone can think of recycling. It's those other two that are the real benefit.

So most companies, manufacturers at least, already have a lean program in place. They do kaizan activities, they have the machinery, they do total productive maintenance, they do 5S—people are used to making improvements. You take that engine that you've already got in place and you turn it on to Green.

And you get a company that has zero landfill and that is moving forward from that, not just stopping there.

SCENE 48

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