my green lab certification.

Your Lab
Green Lab Assessment Results

Prepared by: My Green Lab Programs Team,
19 October 2021

my green lab.

Building a global culture of sustainability in science

Laboratories Are Resource Intensive Spaces
Energy

5X-10X

More energy than office spaces

What scientists have influence over in the lab – roughly 33% of the energy consumption of a lab building

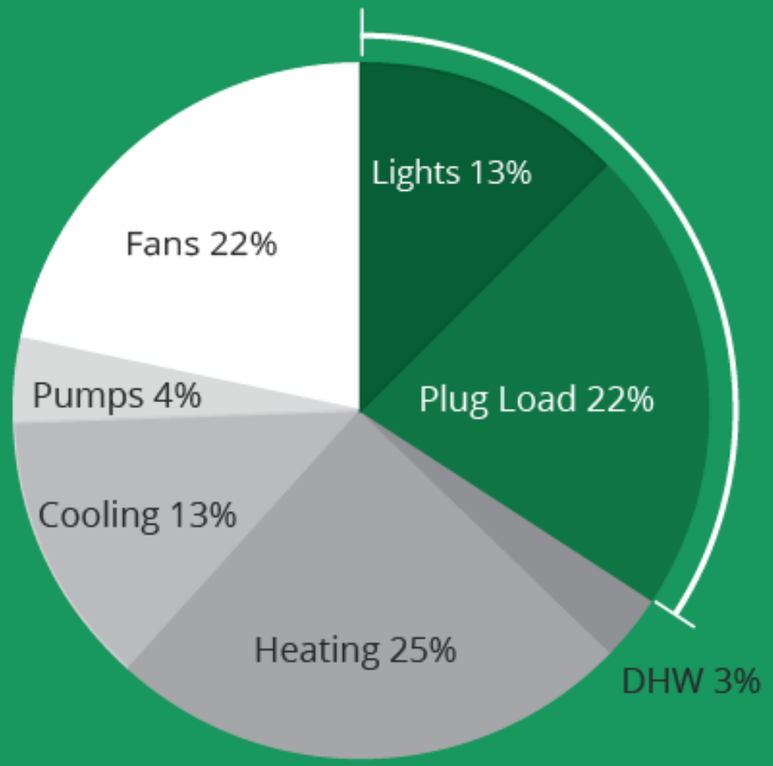


*Chart from Alison Farmer, kW Engineering

Laboratories Are Resource Intensive Spaces
Water

5X

more water use per square foot than office spaces

What scientists have influence over – the rest is determined by lab building design / operations

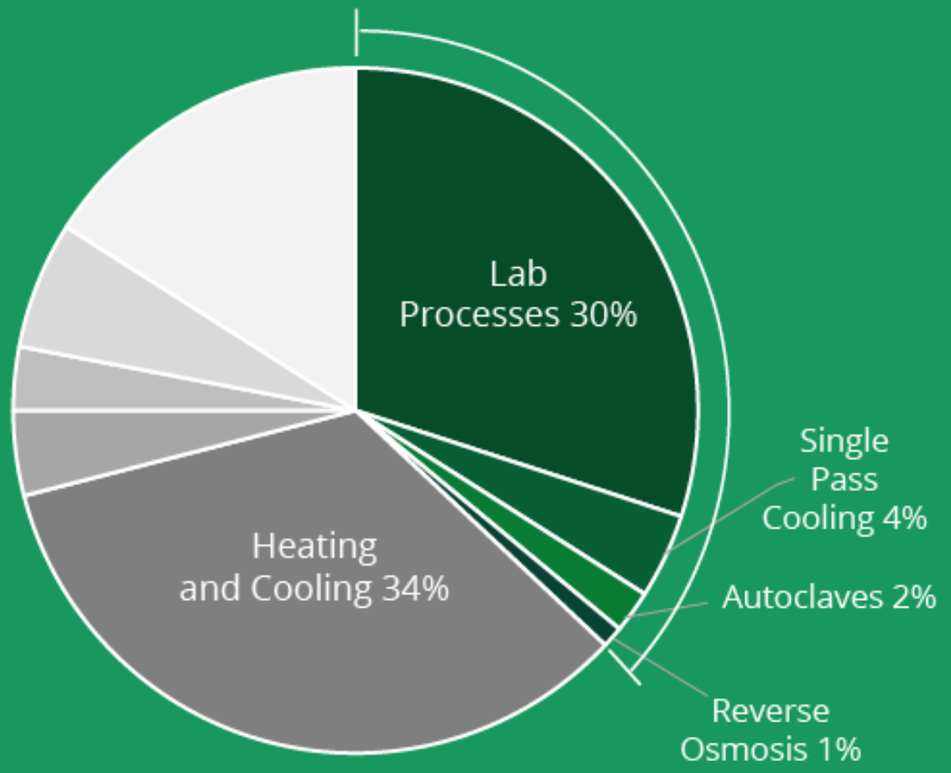


*Chart adapted from US EPA WaterSense 2009

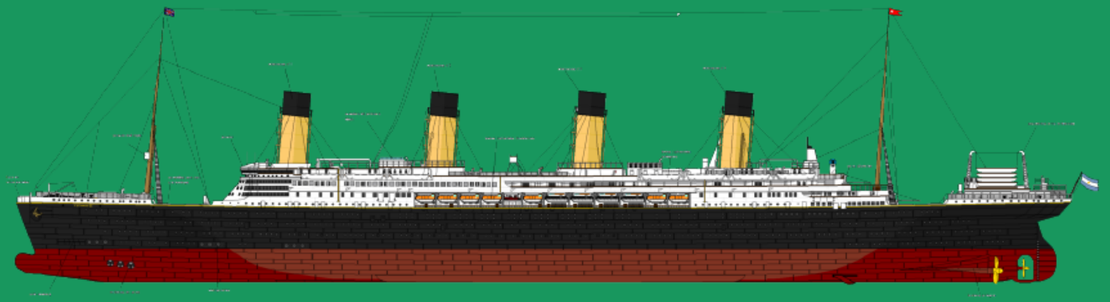
Laboratories Are Resource Intensive Spaces

Plastic Waste

5.5

million metric tons
world wide annually

The weight of



116 Titanic cruiseliners

A Revolution in Science

We can have a positive impact on resource use in our lab.

We Are on a Journey Together

Assess Baseline

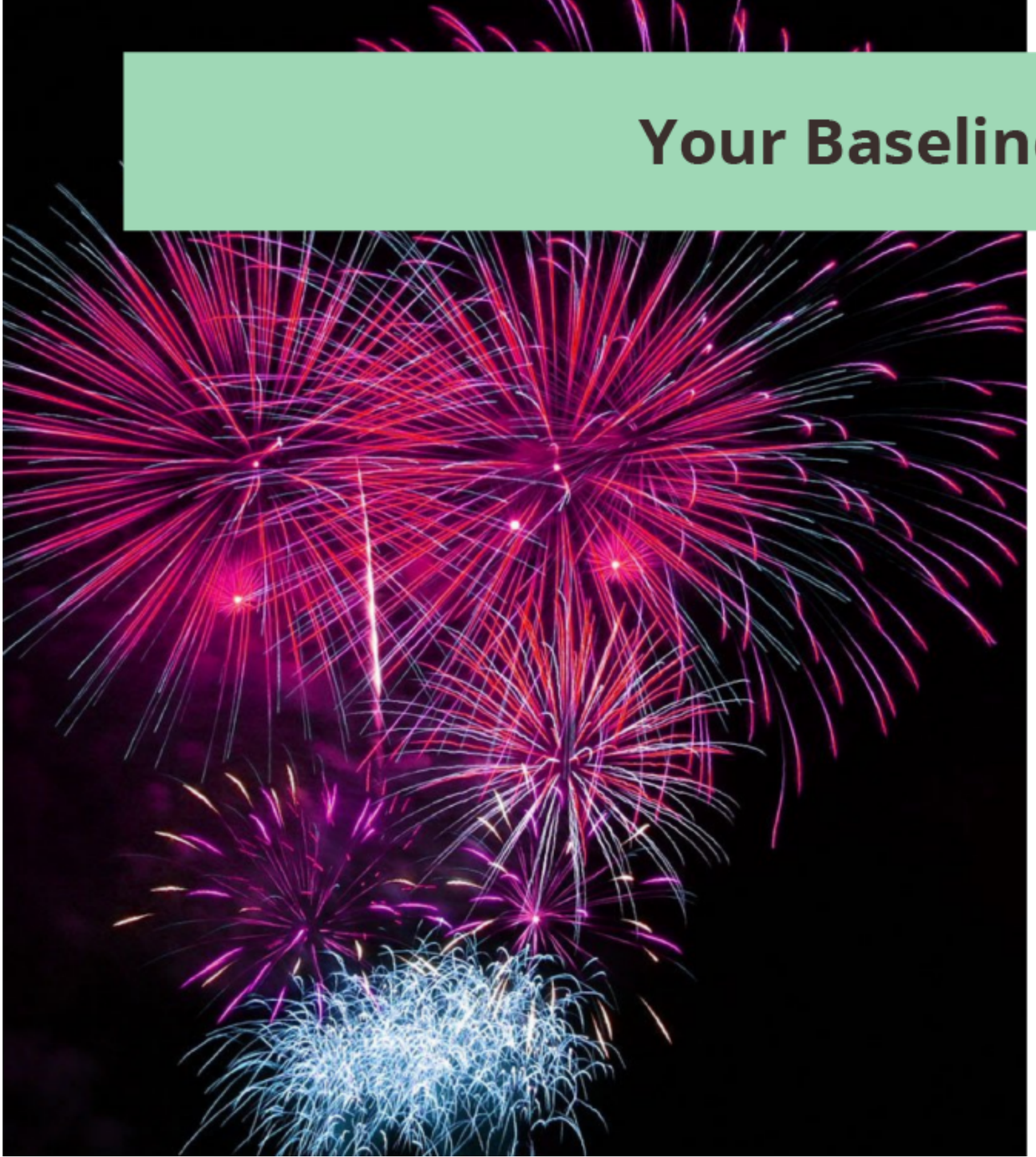
- Survey lab members to understand current practices
- Review recommendations for improvement

Implement Changes

- Over 3-6 months implement behavior change practices
- Labs and Green Teams coordinate additional work

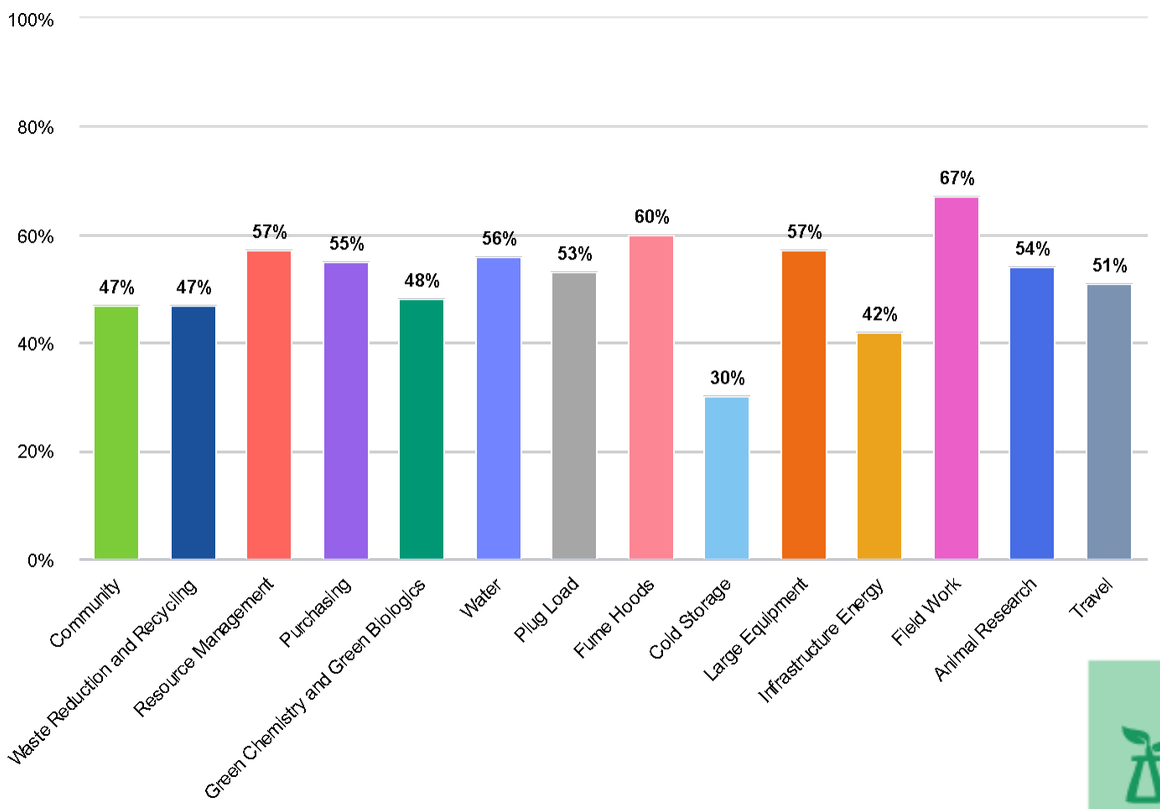
Certification

- Re-assess lab practices
- Earn certification level
- Review recommendations for further improvement based on progress
- Recertification is in two years



Your Baseline Assessment Score 51%

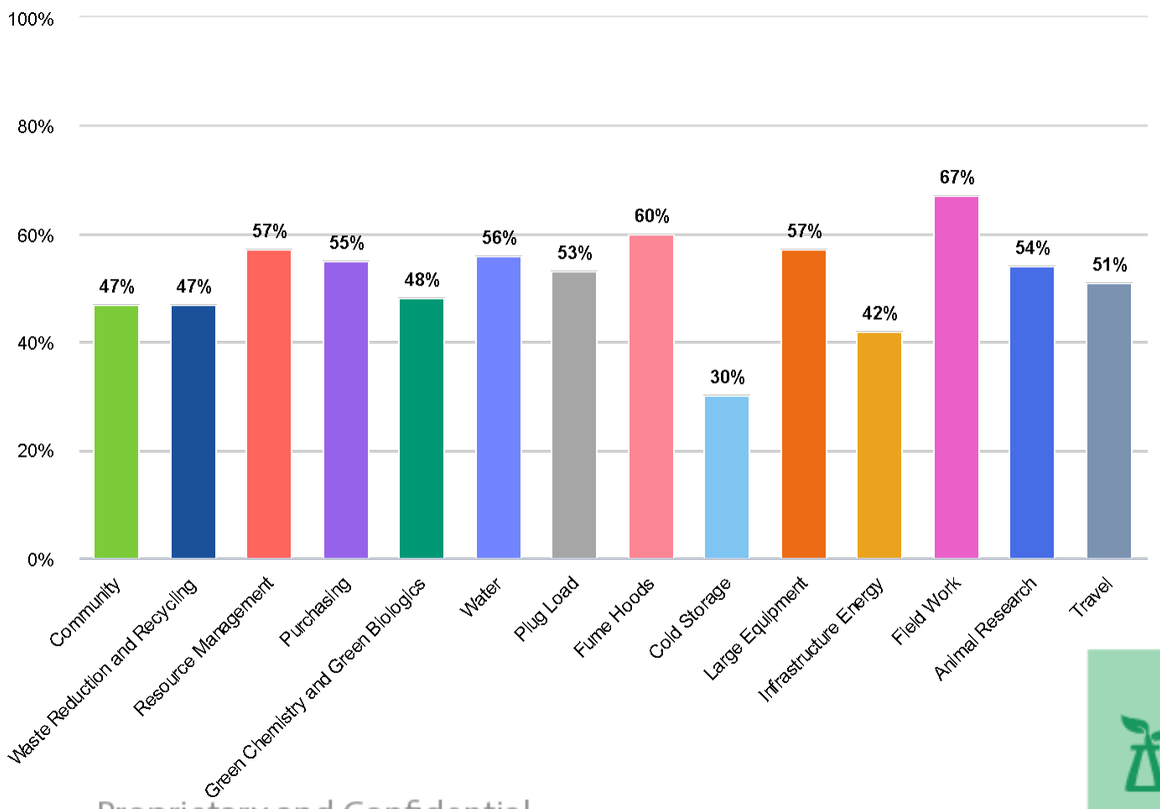
Each topic was assessed based on 5 responses



Your Certification Assessment Score

51%

Each topic was assessed based on 5 responses



Your Certification Level 51%

Bronze

40% or more of Green Lab assessment actions implemented

Silver

50% or more of Green Lab assessment actions implemented

Gold

60% or more of Green Lab assessment actions implemented

Platinum

70% or more of Green Lab assessment actions implemented

Green

80% or more of Green Lab assessment actions implemented

Green Lab Assessment Results

Let's talk about lab sustainability!

Review what is already being done
Discuss some ways we can improve

A Closer Look: Waste Reduction & Recycling

47%

Our Current Successes

- 76% - We take advantage of product/material return programs offered by vendors
- 75% - We use 'take back' programs for packaging in our labs
- 60% - We know what materials can be recycled in the lab and how to sort them properly
- 57% - We recycle gloves when feasible

A Closer Look: Waste Reduction & Recycling

47%

Opportunities for Improvement

- Conducting a waste audit will identify your biggest waste streams, enable you to discuss or research ways to minimize those materials
- Look into reusing your plastic and glassware, by cleaning or autoclaving if necessary, and try not to buy items labeled for 'single use'
- Look into a reusable alternative to ice or dry ice, such as Lab Armor Beads or a Corning CoolBox
- When you purchase items from suppliers who offer product or packaging take-back schemes, you are letting them (and their competitors) know that this is important to you
- Talk to your group, and your facilities/maintenance department, about obtaining recycling bins for your lab space

A Closer Look: Green Chemistry

48%

Our Current Successes

- 82% - We use greener alternative tools or guides
- 75% - We have exchanged mercury-containing devices from the lab
- 58% - We use greener chemicals in the lab
- 56% - We seek ways to minimize chemical or reagent use

A Closer Look: Green Chemistry

48%

Opportunities for Improvement

- Along with yield, consider using atom economy to help you identify more efficient reactions better incorporate mass into your final product
- Explore options to utilize solvent-free separations or methods to reduce solvent waste
- Consider switching to non-radioisotopes for labeling to eliminate radioisotope waste and associate control measures
- Discuss any acutely hazardous materials you use or create in the lab and discuss options to avoid or minimize these
- Talk with your suppliers about the chemicals and reagents you purchase and ask if they have alternatives that are sourced from renewable feedstocks

A Closer Look: Plug Load

53%

Our Current Successes

- 82% - We replace equipment with more energy efficient options
- 70% - We turn off equipment when it is not in use
- 52% - We have investigated the energy consumption of equipment
- 51% - We have checked for and utilize energy saving modes on our equipment

A Closer Look: Plug Load

53%

Opportunities for Improvement

- Have a group discussion about which pieces of equipment must be left on all the time and which may be turned off
- Optimize the number of pieces of equipment and share them instead of having duplicate equipment
- Check for and utilize energy saving modes (standby or sleep modes) on equipment in the lab
- Investigate the energy consumption of the lab's equipment and work with your organization to create a plan to replace the largest energy consumers
- When possible, turn off or unplug equipment when it is not in use or use outlet timers to turn off equipment automatically

A Closer Look: Infrastructure Energy

42%

Our Current Successes

- 70% - We turn off lights in support rooms when not in use
- 61% - We have optimized the temperature of the lab
- 56% - We turn off overhead lighting when daylight is sufficient
- 49% - Thermostats are not blocked

A Closer Look: Infrastructure Energy

42%

Opportunities for Improvement

- Work with your organization to understand what can or has already been done to optimize and set back air changes in the labs
- Work with your organization to understand what can or has already been done to optimize and set back air changes in the labs
- Note any lights that that may not be upgraded and work with the appropriate group to see if they can be upgraded energy efficient LED lighting
- Work with your organization to understand what can or has already been done to optimize and set back temperatures in the labs
- Keep the windows closed so that you are not letting hot or cold air in and conditioned air out

Where We Go From Here

Next Steps in Our Green Lab Journey

- Celebrate!
- Share our accomplishments
- Continue to bring new ideas for change!

Presenter Notes For My Green Lab Baseline Assessment and Certification Feedback Presentations

Slide #	Slide Title	Intention	Speaker Notes
1	Title	Welcome	
2	Laboratories are Resource Intensive Spaces - Energy	Frame the Challenge - Energy	• Laboratories consume significant energy, 5-10 times that of office buildings – but this means labs are also a great opportunity for being more energy efficient. You can have large impact by making a few changes. • A lot of the energy use is wrapped up in the heating, ventilation, and cooling of these high-performance lab buildings, but about a third of the energy use is within the power of scientists to have influence over (lighting and plug loads). • One of the biggest energy consumers in the lab are the fume hoods, so you can influence that too, even though it is part of the building ventilation
3	Laboratories are Resource Intensive Spaces - Water	Frame the Challenge - Water	• Water is used in everything from autoclaves, to distillations, to washing glassware. And that's just the tap water – most labs also use high purity water systems too, which consume significant water to generate those pure water sources. Adding all that together, labs consume roughly 5x more water than office spaces. • Many lab buildings use 7500 kiloliters of water each year • Water is also often used to heat and cool our lab buildings, in the form of steam or cooling water, so having rigid temperature requirements with high air change rates can mean that a lot of water is used in HVAC as well.
4	Laboratories are Resource Intensive Spaces	Frame the Challenge - Waste	• One of the most visible types of resource use in the lab is the single-use plastic waste • As you can imagine, it is difficult to estimate the plastic use by labs worldwide, but this was done by Mauricio Urbina and colleagues in 2015 in a letter to Nature, estimating that labs are disposing of 5.5 million metric tonnes of plastic annually. This is probably an underestimate. • Equivalent to the weight of 116 Titanic cruise liners of plastic waste annually. • Consider your hazardous chemical waste too – estimates from two US university research institutions indicate that about 45 metric tons of hazardous waste annually > destined for landfill or incineration
5	A Revolution In Science	Despite all the scary stuff we just shared, there's hope, and labs can truly be a part of the solution to reducing resource use	• You are at the forefront of a revolution in science • The United Nations "Decade of Action" refers to an ambitious global effort to accelerate sustainable solutions between the years 2020 and 2030. The seventeen areas of focus include affordable and clean energy, climate action, quality education, zero hunger, and more. • Science does not have to be marked by staggering levels of resource use • By doing Green Lab Certification, you are on the road to benefiting people, the planet, and your profits by doing science in a different way • Thank you for starting this journey with us! • At the end of 2021, about 800 labs have been certified or assessed by MGL in the past 5 years

6	We Are on Journey Together	Review the Steps and Timeline	• Use this slide to review the 3-step certification process • After the baseline certification we will take some time to make changes – that's the implementation phase • When we are ready we will re-take the assessment and get our certification level • Labs typically take around 1 year to complete their first certification, and then come back for recertification every 2 years. • Labs can be recertified as many times as they'd like; this encourages labs to focus on continued improvement!
7	Your Baseline Assessment Score	Review of Assessment Score	• Use this slide to show a high-level overview of the lab scores • Start by highlighting the areas where you did well • Point out that there are some areas where you could improve • Your overall score is indicative of what percentage of possible green lab actions you have implemented as well as the extent to which they have been implemented. The more people who answered "always" to a question, the higher the scores will be. • If you had a high percentage of the lab respond to the assessment, be sure to comment about how great it was to have a high level of engagement
8	Your Certification Assessment Score	See what has changed with certification	• Use this slide to show a high-level overview of your certification scores • Point out what has changed – the areas where you saw improvement (click back and forth between the slides, if needed)
9	Your Certification Level	Congratulate lab on achievement	• No matter your score, congratulate the lab on their achievement • If you have confetti, throw it! • If you didn't get green, that means there's room for improvement. But being on this chart at all, and getting certified, means that you are contributing positively to reducing the environmental impact of laboratories
10	Green Lab Assessment Results	Tell them what they do next	• Tip #1 - Use these slides to start the discussion on laboratory sustainability and get people excited about what they can accomplish in the lab! • Tip #2 - There is a lot to cover! Make sure to break the presentation up and pause for brainstorming and discussion • Tip #3 - On the 'Our Current Successes' slides, congratulate the lab on the good work they are doing today and discuss how to get those percentages to 100% • Tip #4 - On the 'Opportunities for Improvement' slides, talk through recommendations for improvements and outline the specific actions that can be taken to make the lab more sustainable • Tip #5 - Use the MGL Action Tracker to organize action items and delegate tasks within the lab. You can find this in your MGL SharePoint
Last	Where We Go From Here	Let them know what the next steps in the process are	• We have now completed the baseline assessment • Over the next 4-8 months, we will work on improvements that we captured in our green lab action plan. We should also take this time to grow our green lab network though our organization and/or through the My Green Lab Ambassador Network. The Ambassador Network is an online community of people like us who are passionate about green labs. They share best practices, ask questions, and have monthly webinars to learn more. • When we have worked through our green lab action plan, we will retake the Green Lab assessment and get our certification level! • But our journey doesn't end there. We will continue to incorporate sustainability into our lab and in another 2 years, recertify the lab