FORRESTER®

NEW TECH

New Technology: The Projected Total Economic Impact™ Of R-Zero

Cost Savings And Business Benefits Enabled By R-Zero

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Table Of Contents

Executive Summary 1

The R-Zero Customer Journey 6

Key Challenges 6

Solution Requirements 7

Composite Organization 8

Analysis Of Benefits 9

Time Savings Due To Faster Setup And Scalability 9

Increased Operational Efficiency In Room Disinfectant Process 10

Cost Savings Compared To Alternative UV-C Solutions 12

Unquantified Benefits 13

Industry-Specific Benefits 14

Analysis Of Costs 16

R-Zero Costs 16

Implementation 17

Ongoing Support And Management 19

Financial Summary 21

Appendix A: New Technology: Projected Total Economic Impact 22

Appendix B: Endnotes 23

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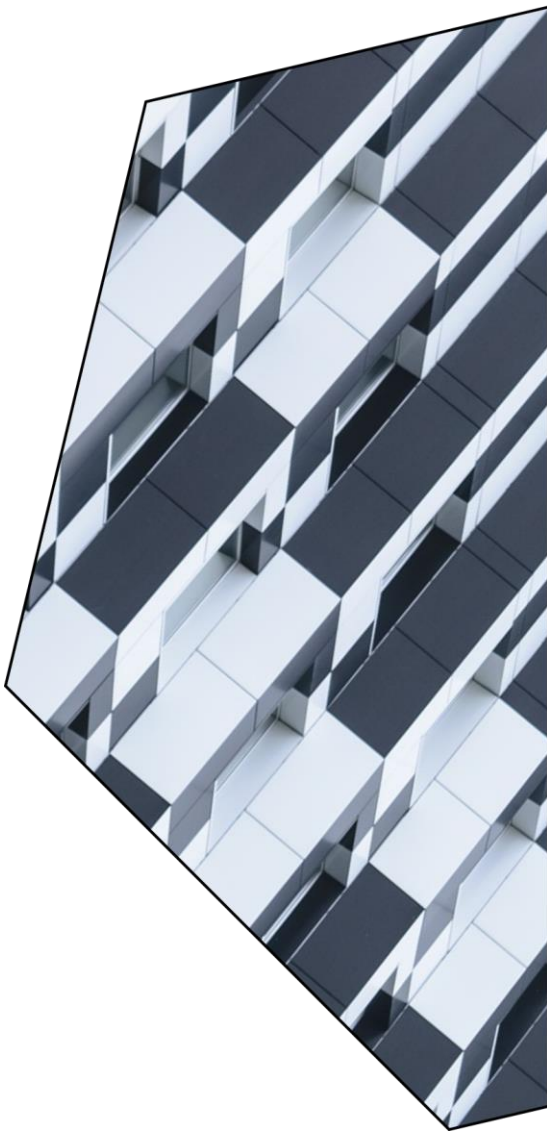


ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. For more information, visit forrester.com/consulting.

Executive Summary

The recent COVID-19 pandemic made various organizations assess their efforts towards good indoor air quality in the workplace. Today, many organizations in healthcare, education, senior care, even traditional corporate settings are looking for ways to eliminate airborne and surface-borne pathogens in their space. Forrester research even noted that some business leaders look for ways their facilities improvements can contribute beyond operational efficiencies and add to new topline growth opportunities.[1]

R-Zero is a technology company that provides smart tools and solutions to disinfect and clean shared spaces. They offer multiple solutions that can be moved from one space to another. They also use analytics and reporting features that allow users to track performance.

R-Zero commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying R-Zero.[2] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of R-Zero on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed six decision-makers with experience using R-Zero. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization.

Prior to using R-Zero, these interviewees noted their organizations were often unaware of the importance of indoor air quality. These organizations largely relied on cleaning efforts that sprayed disinfectant chemicals and wiped surfaces. However, these attempts were often inefficient as they required manual efforts, such as manual wiping, that could often miss hard-to-reach places.

For many organizations, the COVID-19 pandemic was a catalyst event. It made them realize the importance of upgrading their disinfectant efforts and thinking about the overall indoor air quality in their facilities. After the investment in R-Zero, the interviewees shared that key benefits from the investment included an efficient set up of the technology, straightforward user training, improved room disinfectant and cleaning time, and positive impacts to the sense of security.

KEY STATISTICS

Projected return on investment (PROI)
128%

Projected net present value (NPV)
$2.3M

The figures used are projections for a medium-impact scenario.

KEY FINDINGS

Quantified projected benefits. Risk-adjusted present value (PV) quantified benefits include:

- **A 65% to 75% faster time to setup compared to alternative disinfectant units.** Based on R-Zero's claims about the time it would take to ship the technologies, set them up, and train users, the composite organization assumes R-Zero to be anywhere between 65% to 75% faster than other disinfectant technologies. Over three years,

the faster time to setup yields a projected present value (PV) between $23,000 to $27,000.

- **Increased operational efficiency in the disinfectant process of 50% to 83%.** By having R-Zero disinfect the room first, custodial staff at the composite organization can spend less time spraying and wiping after. It assumes R-Zero was able to save 50% to 83% in custodial staff time. Over three years, the increased operational efficiency yields a projected PV between $626,000 to $1 million.
- **UV-C technologies are more cost effective compared to alternatives.** R-Zero is more cost effective than other options and has several features to improve its return on investment. The composite organization assumes the total cost of ownership (TCO) of other UV-C technologies to be four times the cost of R-Zero. Over three years, the cost savings yields a projected PV between $746,000 to $2.2 million.

Unquantified benefits. Benefits that are not quantified for this study include:

- **Better performance in disinfecting spaces leads to increased sense of health and safety.** Interviewees shared that they reviewed the scientific evidence that shows how UV-C reduces airborne and surface borne pathogens with better efficacy performance than alternative methods. Thus, they believed installing this technology increased the sense of health and safety of the various stakeholders meeting and interacting in their indoor space.
- **Brand improvement and business growth.** Interviewees shared that installing R-Zero played a role in their effort to market their brand as an organization. Interviewees in senior care, education, and healthcare — which puts absolute premium on health and safety — believed that highlighting their effort to invest in UV-C technology like R-Zero to complement their overall multipronged approach can attract people, stakeholders, and customers to do business with them.
- **Mobility and scalability of tools lead to new opportunities.** Interviewees shared that the ability to easily move R-Zero UV-C technology from one space to another created new opportunities for their organization. For example, hospitals can introduce ambulatory services and mobile health centers without compromising on cleanliness level of the operation area.
- **Normalization of in-person meetings with positive impact on business growth.** Some interviewees at organizations that valued their knowledge workers and in-person interaction highlighted that R-Zero reintroduced the trust for in-person meetings and activities. Specifically noting the shift to virtual work due to the pandemic, certain organizations and industries that require human interaction believed they benefited from efforts to renormalize physical human interactions.
- **Technology installation represents commitment to workplace safety that impacts employee satisfaction.** Interviewees noted that their organizations' investments in R-Zero represented a commitment to their employees for ensuring workplace safety and indoor air quality. As a result, interviewees believed this impacted employee satisfaction and likely played a role in overall churn rate.
- **Additional capabilities such as reporting and data analytics.** Interviewees shared that R-Zero had additional features like reporting and data analytics. This gave them visibility into the tool's performance in disinfecting a space and indoor air quality, which is something they did not have before. Additionally, the ease in generating reports allowed them to easily communicate with executives, business unit leaders, and other decision-makers in their organization.

Costs. Risk-adjusted PV costs include:

- **R-Zero costs.** The cost of R-Zero depends on the exact solution to be installed and the square footage of area that will be covered to be disinfected. R-Zero guarantees the asset performance over a number of years for the composite organization.
- **Internal costs related to implementation.** The implementation of R-Zero is relatively light, requiring involvement from a small number of internal employees to help with the setup of R-Zero solution at the composite organizations.

  Internal costs related to ongoing support and management. Once the tools are set up, ongoing support and management can look slightly different depending on what the composite organization needs.

Forrester modeled a range of projected low-, medium-, and high-impact outcomes based on evaluated risk. This financial analysis projects that the composite organization accrues the following three-year net present value (NPV) for each scenario by enabling R-Zero:

- Projected high impact of a $2.3 million NPV and projected ROI of 222%.
- Projected medium impact of a $1.3 million NPV and projected ROI of 128%.
- Projected low impact of a $368,500 NPV and projected ROI of 36%.

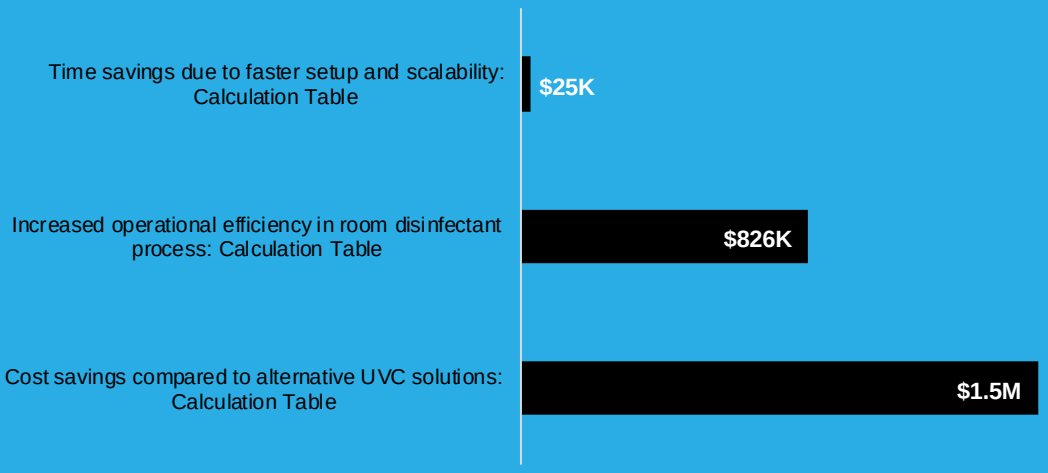
PROJECTED ROI
128%

PROJECTED BENEFITS PV
$2.3M

PROJECTED NPV
$1.3M

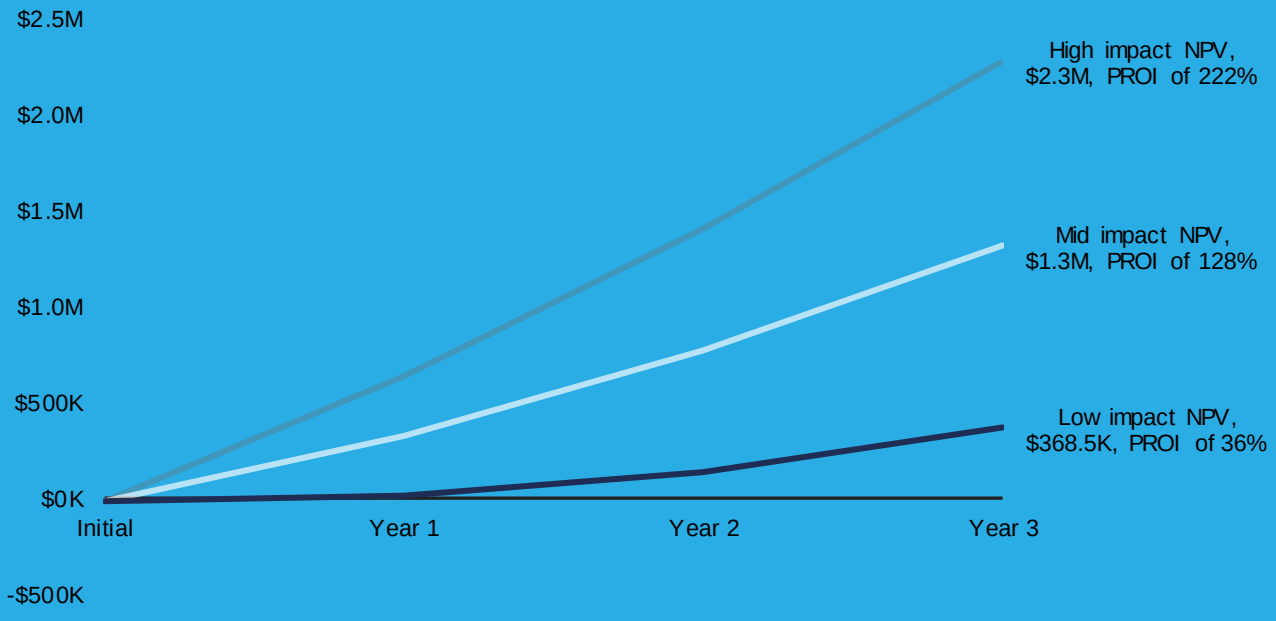
TOTAL COSTS
$1M

Projected benefits



The figures used are projections for a medium-impact scenario.

Three-Year Projected Financial Analysis For The Composite Organization



NEW TECH TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a New Technology: Projected Total Economic Impact™ (New Tech TEI) framework for those organizations considering an investment in the R-Zero.

The objective of the framework is to identify the potential cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the projected impact that the R-Zero can have on an organization.

DUE DILIGENCE

Interviewed R-Zero stakeholders and Forrester analysts to gather data relative to the R-Zero.

EARLY-IMPLEMENTATION CUSTOMER INTERVIEWS

Interviewed six decision-makers at organizations using the R-Zero in a pilot or beta stage to obtain data with respect to projected costs, benefits, and risks.

COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewees' organizations.

PROJECTED FINANCIAL MODEL FRAMEWORK

Constructed a projected financial model representative of the interviews using the New Tech TEI methodology and risk-adjusted the financial model based on issues and concerns of the decision-makers.

CASE STUDY

Employed four fundamental elements of New Tech TEI in modeling the investment's potential impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The R-Zero Customer Journey

Drivers leading to the R-Zero investment

Interviewed Decision-Makers

Interviewee	Industry	Region	UV-C Units Implemented
Chief of facilities	Education	North America	350-400 units
VP of facility management	Senior care	North America	100-150 units
Department director	Healthcare	North America	1 unit (pilot)
Partner	Venture capital	Global	1 unit
Chief of information security officer	Digital healthcare	North America	3 units
Chief operating officer (COO)	Chemical manufacturer	North America	40-50 units

KEY CHALLENGES

Prior to their investment in R-Zero, interviewees noted that their organizations' main disinfecting approaches were having their custodial service staff members spray disinfectant chemicals and wipe surfaces. Some organizations were already familiar with UV-C technologies and had used a UV-C unit for their room cleaning processes.

The interviewees noted how their organizations struggled with common challenges, including:

- **Lack of awareness on indoor air quality issues.** The pandemic truly raised awareness among organizations around indoor air quality issues. Interviewees noted how much they were lacking in knowledge around the measures required to ensure the health and safety of people. The chief of facilities in education shared: "Prior to the pandemic, talking about indoor air quality was a niche topic. The pandemic brought awareness, so we are trying to capitalize on that and connect our effort in facilities improvement to improvements in indoor air quality."
- **Concerns about the efficacy of current cleaning and disinfectant process.** Interviewees shared that they had concerns with how many airborne and surface-borne pathogens they were able to completely eliminate with their manual spraying and wiping disinfectant efforts. The VP of facility management in senior care noted: "It's hard to have a well-defined, reliable

"Our employees and residents needed tangible evidence to be confident of their safety."

VP of facility management, senior care

"The reality is, prior to COVID-19, [indoor air quality] is not something we thought about a whole lot."

Chief information security officer, digital healthcare

process when it comes to cleaning static surfaces. An individual custodial service wiping down surfaces is not always going to be perfect."

- **Cost and operational inefficiencies of prior efforts.** Some interviewees noted that they were continuously looking to increase the efficiency of their disinfectant operations. The department director in healthcare shared: "The reason we looked at R-Zero was cost, as they claim to be cheaper than others while having faster turnaround time when disinfecting rooms."

"UV-C light can hit everything where our hands cannot. With UV-C, we are sure we can get everywhere we need to [clean]."

Department director, healthcare

SOLUTION REQUIREMENTS

To address these challenges, the interviewees' organizations searched for a solution that:

- **Could be deployed rapidly.** Interviewees were seeking a solution that could be deployed rapidly. This was especially true for interviewees at organizations with multiple locations where they planned to install R-Zero. The chief of facilities in education said: "[COVID-19] was surging [and] we could possibly have to shut school down and go full distance. We wanted to make sure we were doing everything we could to mitigate that risk. The fact that R-Zero can produce the units quickly and get them deployed was a primary factor [when choosing R-Zero]."
- **Is easy to learn and use.** Interviewees noted that their organizations' staff and employees could easily learn how R-Zero solutions work without needing extensive training. The VP of facility management at a senior care facility noted: "The units were very simply [and] easy to use. We deployed in early 2021 [because] we didn't want to add to the COVID-19 spread. R-Zero allowed us to train employees remotely through videos and not have to be hands-on with every single employee."
- **Performs as expected.** Interviewees noted one of the main criteria when comparing R-Zero with alternative solutions was testing and finding evidence that the solution can perform as expected. The department director at a hospital network told Forrester: "What we looked at was whether [R-Zero] was able to do what they claimed to do, and how was that better than the performance of the alternative solutions."
- **Has data collection capabilities.** Interviewees noted that R-Zero's data collecting and analytics features were a key differentiator when compared to other solutions. The chief of facilities in education said: "The data collection capabilities was one of the features we appreciated. We wanted to be able to show the public that we did what we said we are going to do."

"[R-Zero] makes our employees feel safer from airborne and surface-borne pathogens."

Chief information security officer, digital healthcare

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the six decision-makers that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite organization is a US-based organization with 30 different locations across the country. The composite organization is implementing R-Zero to complement its multipronged disinfectant practice. Each location has 10 rooms that needs to be cleaned daily in a work week, i.e., five times per week.

Deployment characteristics. The composite organization installs one unit per location. They begin by installing units in 10 locations in Year 1, another 10 locations in Year 2, and the final 10 locations in Year 3. Implementation of R-Zero in each location is managed by two internal staff who will support the setup, training, and ongoing support and management around the tool. Additionally, one custodial staff member at each location will be trained per year to understand how to operate the R-Zero tool.

Key assumptions

- **30 different locations, with 10 rooms each**
- **Implementation starts with 10 locations in Year 1, 10 locations in Year 2, and the last 10 locations in Year 3**
- **Each room cleaned five times per week**
- **Two internal staff per location managing R-Zone setup, training, and ongoing support**
- **One custodial staff per location are trained each year**

Analysis Of Benefits

Quantified benefit data as applied to the composite

Total Projected Benefits					
Benefit	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Total projected benefits - Low	$439,490	$569,490	$699,490	$1,708,470	$1,395,727
Total projected benefits - Mid	$781,820	$953,420	$1,125,020	$2,860,260	$2,343,940
Total projected benefits - High	$1,126,750	$1,342,550	$1,558,350	$4,027,650	$3,304,675

TIME SAVINGS DUE TO FASTER SETUP AND SCALABILITY

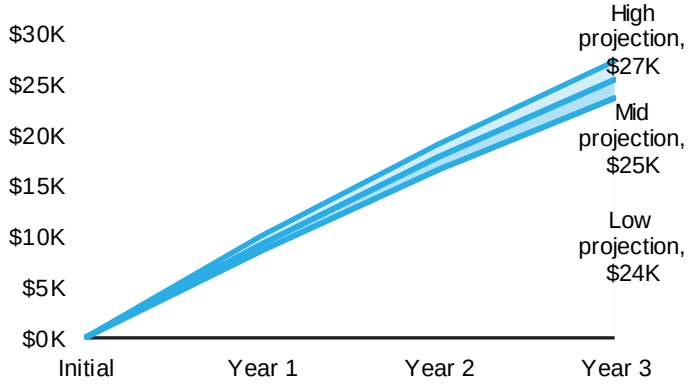
Evidence and data. Interviewees shared that installing R-Zero was a quick and easy process, especially when compared to alternative disinfecting solutions. This meant internal employees who were involved with the setup did not have to allocate too much time for this process, which would have taken time away from other tasks. For interviewees at organizations that had multiple sites for R-Zero implementation, the ease of installing and setting up R-Zero translated to ease of scaling the use case across locations.

- The chief of facilities in education noted, "The fact that [R-Zero] could provide 400 units in three weeks, while other vendors could only do [that] 90 to 120 days, if not more, was definitely a factor in us deciding to move forward with R-Zero."
- The VP of facility management in senior care said, "From an operational perspective, [R-Zero]'s units were very simple and easy to use."
- The chief information security officer in digital healthcare added: "Having the units shipped was quick. The big lift is more to coordinate things around the time of setup, but it's not difficult work."

Modeling and assumptions. Based on the customer interviews, Forrester assumes the following about the composite organization:

- Two internal employees per location are involved in the setting up of R-Zero.
- Each year, R-Zero is set up in 10 different locations.
- The average fully burdened salary of the involved employees is $73,000.[3]
- Each employee dedicates 25% of their time to the setup of R-Zero.
- The total time for implementation is two weeks.
- Implementation for a non-R-Zero solution is assumed to be 65% longer in the low-case scenario, 70% longer in the mid-case scenario, and 75% longer in the high-case scenario.

Results. This yields a three-year projected PV ranging from $23,000 (low) to $27,000 (high).



Time Savings Due To Faster Setup And Scalability					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Number of employees involved	Composite	20	20	20
A2	Average fully burdened salary of employees	Forrester standard	$73,000	$73,000	$73,000
A3	Percentage of time dedicated to setup	Assumption	25%	25%	25%
A4	Time to set up with R-Zero	Composite	0.04	0.04	0.04
$A5_{Low}$	Percentage of additional time needed to setup non R-Zero	Interview	65%	65%	65%
$A5_{Mid}$			70%	70%	70%
$A5_{High}$			75%	75%	75%
At_{Low}	**Time savings due to faster setup and scalability**	**A1*A2*A3*A4*A5**	**$9,490**	**$9,490**	**$9,490**
At_{Mid}			**$10,220**	**$10,220**	**$10,220**
At_{High}			**$10,950**	**$10,950**	**$10,950**
Three-year projected total: $28,470 to $32,850			**Three-year projected present value: $23,600 to $27,231**		

INCREASED OPERATIONAL EFFICIENCY IN ROOM DISINFECTANT PROCESS

Evidence and data. Interviewees shared that using R-Zero did not mean their organization eliminated the previous efforts of custodial staff disinfecting facilities with spraying and wiping. That being said, interviewees did believe having R-Zero disinfect a room for the first couple minutes meant their custodial services did not have to spend as much time wiping surfaces as they did before R-Zero. Thus, as whole, the room disinfectant process was more efficient.

- The department director in healthcare said, "R-Zero could do a 9-minute turnaround to disinfect a room, which is faster when compared the alternative UV-C that takes 15 minutes.
- The chief of facilities in education added: "R-Zero Arc is an aggressive product that has a 2-minute dwell time to kill viruses, germs, and disinfect.

"I believe the data from R-Zero Arc will help reduce the disinfectant cleaning effort, particularly the extra effort they had to do since the pandemic."

Chief of facilities, education

We're now not buying as much disinfectant chemicals."

- The chief of information security officer in digital healthcare said, "The Arc works in 7-minute increments."

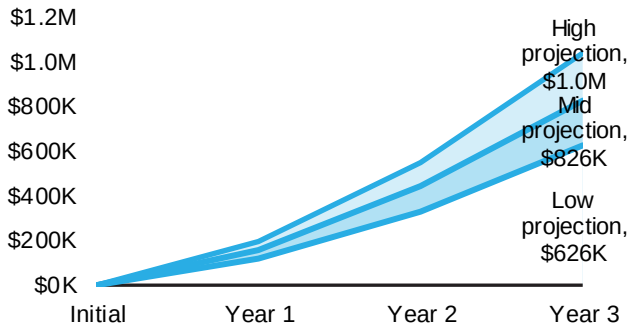
Interviewees also noted that using R-Zero also had some impact on their HVAC energy savings. The COO at a chemical manufacturer said, "We probably realized a 27% to 28% savings in our HVAC energy

costs by using R-Zero [because it didn't] have to use a 24-hour ventilation system."

Modeling and assumptions. Based on the customer interviews, Forrester assumes the following about the composite organization:

- Each location has 10 rooms that need to be disinfected.
- Room cleaning happens every weekday, i.e., five times a week.
- The room cleaning process prior to R-Zero takes 30 minutes per room.
- With R-Zero, the room cleaning process time is accelerated by 50% in the low-case scenario, 66% in the mid-case scenario, and 83% in the high-case scenario.
- The fully burdened hourly rate of custodial service is assumed to be $20.[4]

Results. This yields a three-year projected PV ranging from $626,000 (low) to $1 million (high).



Increased Operational Efficiency In Room Disinfectant Process

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Total number of rooms	Composite — 10 rooms per location; one unit per location	100	200	300
B2	Frequency of cleaning per room per year	Interview — five days per week x 52 weeks	260	260	260
B3	Subtotal: Total number of room cleaning efforts per year	B1*B2	26,000	52,000	78,000
B4	Time for disinfectant process for each room without R-Zero in hours	Assumption	0.50	0.50	0.50
$B5_{Low}$	Percentage acceleration in disinfection process for each room with R-Zero in hours	Assumption	50%	50%	50%
$B5_{Mid}$			66%	66%	66%
$B5_{High}$			83%	83%	83%
B6	Fully burdened hourly rate of custodial service	Interview	$20	$20	$20
Bt_{Low}	**Increased operational efficiency in room disinfectant process**	**B3*B4*B5*B6**	**$130,000**	**$260,000**	**$390,000**
Bt_{Mid}			**$171,600**	**$343,200**	**$514,800**
Bt_{High}			**$215,800**	**$431,600**	**$647,400**
Three-year projected total: $780,000 to $1,294,000		**Three-year projected present value: $626,071 to $1,039,277**			

COST SAVINGS COMPARED TO ALTERNATIVE UV-C SOLUTIONS

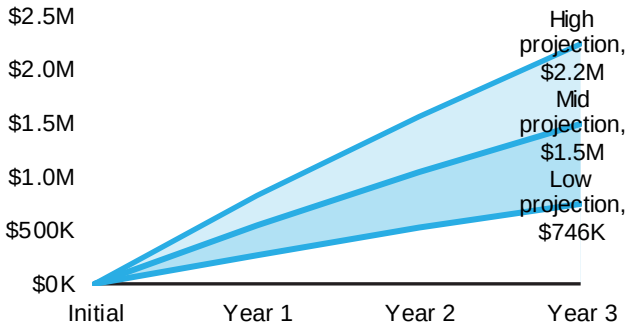
Evidence and data. Interviewees noted that R-Zero was more cost effective than alternative UV-C solutions. This could mean that either R-Zero was cheaper per unit or had more features included for similar price points.

- The department director in healthcare said: "The current UV-C machine we use cost $130,000 per unit. R-Zero cost $30,000 per unit. That makes for a significant cost saving."
- The VP of facility management in senior care added, "[R-Zero] had reporting capacities that other technologies at the same price point did not offer."

Modeling and assumptions. Based on the customer interviews, Forrester assumes the following about the composite organization:

- Ten R-Zero units are installed each year.
- The average cost of R-Zero units is $30,000.
- The composite would have to pay 200% more for a non-R-Zero solution in the low case, 300% more in a mid-case, and 400% more in a high case.

Results. This yields a three-year projected PV ranging from $746,000 (low) to $2.2 million (high).



Cost Savings Compared To Alternative UV-C Solutions

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Number of UV-C units needed	Composite	10	10	10
C2	Average cost of R-Zero UV-C	Assumption	$30,000	$30,000	$30,000
$C3_{Low}$	Percentage difference in cost for a non-R-Zero solution	Interview	200%	200%	200%
$C3_{Mid}$			300%	300%	300%
$C3_{High}$			400%	400%	400%
Ct_{Low}	**Cost savings compared to alternative UV-C solutions**	**C1*([C3*C2]-C2)**	**$300,000**	**$300,000**	**$300,000**
Ct_{Mid}			**$600,000**	**$600,000**	**$600,000**
Ct_{High}			**$900,000**	**$900,000**	**$900,000**
Three-year projected total: $900,000 to $2,700,000		**Three-year projected present value: $746,056 to $2,238,167**			

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Brand improvement and potential impact on topline growth.** Interviewees shared their belief that investing in R-Zero was an effort to improve their organizational brand. The VP of facility management in senior care said: "We have different channels that filter prospective residents to our campuses. One is hospital networks. If we can show them that we are doing more than everybody else, that's a market differentiator. An improvement in brand leads to more business."

  This can lead to further savings when thinking about possible correlation with insurance premiums. The COO of a chemical manufacturer noted: "Businesses are trying to reduce contact with any form of injury for employees. This is something that insurance companies love in terms of risk assessment. We can potentially get lower figures on our insurance premiums by showing them we use UV-C to reduce risk."
- **New opportunities from mobility of R-Zero.** Interviewees shared that the ease of mobilizing R-Zero technologies from one place to another could be translated into new opportunities and new product or service offerings by their organization. The department director in healthcare said, "R-Zero can help give hospitals the agility and ability to do mobile clinics or ambulatory surgical centers because their products are light and more efficient to be moved around."
- **Reporting and data integration features.** Interviewees highlighted R-Zero's ability to generate reports that can be shared with key stakeholders as a differentiating feature when compared to alternative solutions. The department director in healthcare noted: "Having the analytics is great. We can actually look at how many times we use the UV-C in each area. If there is an infection event that happens, we are able to track it down to see if we actually used the tool. We can see and compare our infection events from when we started using it to when we stopped using it and you can see a trend."

  The COO at a chemical manufacturing company added: "R-Zero gave us a better understanding of our office space utilization. With their analytics, I can see companies that rent offices being able to save thousands of square feet worth of spending by understanding how their employees use their office space."

"We now have data to show whether a surface just looks clean or is actually clean."

Chief of facilities, education

INDUSTRY-SPECIFIC BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

Healthcare: For healthcare companies, ensuring facilities are at the highest levels of cleanliness and disinfection is paramount. Therefore, their goal with R-Zero is to achieve the highest level and efficacy of disinfection — more so than operational efficiency.

The chief information security officer noted: "R-Zero will scientifically reduce all airborne and surface borne pathogens, viruses, bacteria, etc. R-Zero has white papers and scientific studies to show they work."

Senior care: For senior care facilities, their business model of working with hospital networks and positioning themselves relative to other facilities means they put a lot of thought into their brand perception relative to other senior care facilities and to healthcare partners.

The VP of facility management said: "If we could reduce healthcare-acquired infection by one per year through utilizing the R-Zero devices on our campus, it could result in cost savings or avoidance from not having an infection event. That can be the difference in us getting another resident. Improvement in brands leads to more business for us."

Education: For education organizations, their decision to invest in R-Zero is connected to their thought process related to teacher and student absenteeism, and how that impacts their future education budget.

"One of the success barometers for R-Zero is that people are safer. If my employees feel confident coming back to the office and productive, that's a success."
VP of facility management, senior care

"We are quickly outpacing the industry in rebuilding our business to get it back to pre-COVID-19 levels. We feel strongly that we can do this because of our investment in R-Zero."
VP of facility management, senior care

The chief of facilities noted: "Simplistically, keeping our teachers in classroom allows us to avoid the cost of hiring a substitute, which can add up. On a higher level, there is a correlation between student absenteeism and our education budget. If a student misses a number of days, they can no longer be considered enrolled, and we no longer get funded for that student."

Corporate offices: For organizations across industries that have an office setting, their decision to invest in R-Zero is connected to:

- **Renormalization of in-person meetings.** Interviewees noted that their organization relied on in-person attendance in the workplace. They believed the presence of R-Zero contributed to employees' gradual rebuilding of trust and confidence in a physical workplace again. The partner in venture capital shared: "We are a people business, and we need to talk to founders and CEOs. Doing that over video makes it hard to convey presence, intent, and emotions. We want to establish and build trust, which can be done most effectively in-person."
- **Employee satisfaction and potential impact on turnover.** Interviewees shared how their investment in R-Zero was also an effort to protect their employees in the workplace. The VP of facility management in senior care said: "Coming out of COVID-19, our employees very

understandably had concerns about safety because [the virus] was a big issue in a lot of senior care facilities. We needed a very tangible way that our employees could see and be confident about the safety of this work environment."

The chief information security officer in digital healthcare added: "Right now, every company is dealing with high rates of attrition and the "great resignation." I want my employees to feel happy and safe. If I put in a solution that keep even one employee from leaving, I would have already paid for the solution."

Analysis Of Costs

Quantified cost data as applied to the composite

Total Costs							
Ref.	**Cost**	**Initial**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Dtr	R-Zero costs	$0	$315,000	$315,000	$315,000	$945,000	$783,358
Etr	Implementation	$16,060	$16,060	$16,060	$0	$48,180	$43,933
Ftr	Support and ongoing management	$0	$80,410	$80,410	$80,410	$241,230	$199,968
	Total costs (risk-adjusted)	$16,060	$411,470	$411,470	$395,410	$1,234,410	$1,027,259

R-ZERO COSTS

The cost of R-Zero for the interviewees' organizations was determined by the type of product they need to be installed and the square footage of the area to be disinfected. R-Zero products also guaranteed the organizations asset performance over a number of years.

Modeling and assumptions. Based on the customer interviews, Forrester assumes the composite purchases 10 R-Zero units per year and pays $30,000 per unit.

Risks. TEI risk factors are based on triangular distribution. The pricing an organization will receive for its R-Zero investment will differ depending on:

- The type of unit being installed.
- The square footage of areas that need to be disinfected.
- The use of optional services offered by R-Zero.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $783,000.

R-Zero Costs						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
D1	Number of devices procured	Composite		10	10	10
D2	Average cost per device	R-Zero		$30,000	$30,000	$30,000
Dt	R-Zero costs	D1*D2	$0	$300,000	$300,000	$300,000
	Risk adjustment	↑5%				
Dtr	R-Zero costs (risk-adjusted)		$0	$315,000	$315,000	$315,000
Three-year total: $945,000			**Three-year present value: $783,358**			

IMPLEMENTATION

Evidence and data. Interviewees shared that the implementation of R-Zero at their workplace involved a number of internal employees that would then be responsible in communicating the value of the tool to the organization at large. The involvement by these employees ranged from organization to organization. Some elected to have more in-depth involvement, while others preferred to be more lightly involved.

- The head of facilities in education said: "We had four to five people involved who dedicated 80% of their time. The whole implementation in our 300+ locations took 10 days."
- The VP of facility management in senior care said: "We had one program manager dedicating 30% to 40% of their time for R-Zero setup. We also had five developers from IT dedicate 10% of their time to collecting the analytics. The whole process from set up, integration, and training people at our 100+ locations took two months."
- The chief information security officer in digital healthcare said: "We had two people dedicating less than 5% of their time in our one-week implementation [period]."

Modeling and assumptions. Based on the customer interviews, Forrester assumes the following about the composite organization:

- Implementation, which includes installation and training users at the 10 locations per year, takes two weeks.
- Two internal employees per location are involved in setup and training.
- The internal employees dedicate 25% of their time to implementation and training with R-Zero.
- The average fully burdened salary of the involved employee is $73,000.[5]

Risks. The internal cost an organization spends on implementation-related expenditures may differ depending on:

- The number of locations and geographic spread where R-Zero units will be installed.
- The existing knowledge, resources, and capabilities within the staff.
- The geography where the organization is located can impact the average fully burdened salary.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $43,000.

Implementation

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	Time for implementation	Assumption	0.04	0.04	0.04	
E2	Number of employees involved	Composite	20	20	20	
E3	Average fully burdened salary per employee	Assumption	$73,000	$73,000	$73,000	
E4	Percentage of dedicated time	Interview	25%	25%	25%	
Et	Implementation	E1*E2*E3*E4	$14,600	$14,600	$14,600	$0
	Risk adjustment	↑10%				
Etr	Implementation (risk-adjusted)		$16,060	$16,060	$16,060	$0
Three-year total: $48,180			**Three-year present value: $43,933**			

ONGOING SUPPORT AND MANAGEMENT

Evidence and data. Similar to implementation, the degree of involvement from internal employees with the ongoing support and management of R-Zero varied from one interviewee's organization to another.

- The head of facilities in education said: "We spent 8 to 10 hours per week analyzing the data collected by R-Zero. We would then follow up with schools that are not using the product. We would do some reeducation effort. Training of our staff is incorporated into the onboarding process. The training would take 30 minutes on average per custodial staff per year."
- The VP of facility management in senior care said: "Our program manager spends 5% to 10% of their time on ongoing support and management. For training, we just use the video training provided by R-Zero."
- The department director in healthcare said: "We have three people managing the relationship with R-Zero: facilities, infection prevention, and risk management. R-Zero would help with training users."
- The chief information security officer in digital healthcare said: "We don't allocate specific resources to ongoing support and management, unless there is some indication that something is going wrong. Training our custodial staff on how to use the technology takes 15 minutes."

Modeling and assumptions. Based on the customer interviews, Forrester assumes the following about the composite organization:

- The same two internal employees per location that are involved with setup and training are responsible for ongoing support and management.
- The internal employees dedicate 5% of their time to ongoing support and management of R-Zero.
- The average fully burdened salary of the involved employee is $73,000.[6]
- One custodial staff member per location is trained in using R-Zero per year.
- Custodial training takes 30 minutes.
- The fully burdened hourly rate for custodial staff is $20.[7]

Risks. The internal cost an organization spends related to ongoing support and management may differ depending on:

- The initiative by the implementing organization on utilizing the data and information collected by R-Zero.
- The existing knowledge, resources, and capabilities within the staff.
- The geography where the organization is located can impact the average fully burdened salary.

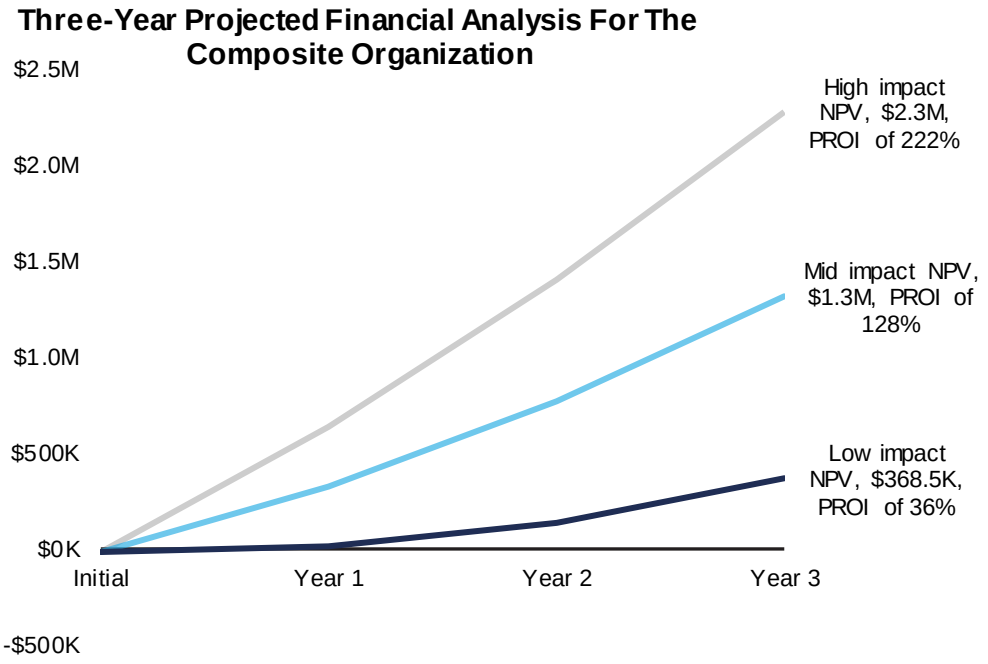
Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $199,000.

Support And Ongoing Management

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
F1	Number of employees involved	Composite		20	20	20
F2	Average fully burdened salary per employee	Assumption		$73,000	$73,000	$73,000
F3	Percentage of dedicated time	Interview		5%	5%	5%
F4	Total ongoing management involvement for employees	F1*F2*F3		$73,000	$73,000	$73,000
F5	Number of custodial staff trained per year	Composite		10	10	10
F6	Time for training per year	Assumption		0.5	0.5	0.5
F7	Fully burdened hourly rate of custodial service	B6		$20	$20	$20
F8	Total annual training cost for custodial service	F5*F6*F7		$100	$100	$100
Ft	Support and ongoing management	F4+F8	$0	$73,100	$73,100	$73,100
	Risk adjustment	↑10%				
Ftr	Support and ongoing management (risk-adjusted)		$0	$80,410	$80,410	$80,410
Three-year total: $241,230			**Three-year present value: $199,968**			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS



The financial results calculated in the Benefits and Costs sections can be used to determine the PROI and projected NPV for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted PROI and projected NPV values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($16,060)	($411,470)	($411,470)	($395,410)	($1,234,410)	($1,027,259)
Total benefits (low)	$0	$439,490	$569,490	$699,490	$1,708,470	$1,395,727
Total benefits (mid)	$0	$781,820	$953,420	$1,125,020	$2,860,260	$2,343,940
Total benefits (high)	$0	$1,126,750	$1,342,550	$1,558,350	$4,027,650	$3,304,675
PROI (low)						36%
PROI (mid)						128%
PROI (high)						222%

Appendix A: New Technology: Projected Total Economic Impact

New Technology: Projected Total Economic Impact (New Tech TEI) is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value of their products and services to clients. The New Tech TEI methodology helps companies demonstrate and justify the projected tangible value of IT initiatives to senior management and key business stakeholders.

TOTAL ECONOMIC IMPACT APPROACH

Projected Benefits represent the projected value to be delivered to the business by the product. The New Tech TEI methodology places equal weight on the measure of projected benefits and the measure of projected costs, allowing for a full examination of the effect of the technology on the entire organization.

Projected Costs consider all expenses necessary to deliver the proposed value of the product. The projected cost category within New Tech TEI captures incremental ongoing costs over the existing environment that are associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix B: Endnotes

[1] Source: "IoT Solutions Transform Smart Buildings Into Strategic Productivity Assets," Forrester Research, Inc., August 2, 2021.

[2] Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

[3] Fully burdened salary includes both the direct wages and indirect costs of hiring and employment. Burden rate refers to indirect costs of employment beyond direct compensation, including, but not limited to: hiring costs, training costs, insurance, paid time off, sick leave, expenses, retirement contributions, payroll taxes, and incremental technology and workplace costs for the employee. As of December 2021, benefits account for 31% of total civilian worker compensation in the United States according to the Bureau of Labor Statistics. Forrester TEI studies include a 35% burden rate in addition to wages to include benefits and other indirect costs.

[4] Ibid.
[5] Ibid.

[6] Ibid.
[7] Ibid.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