



## KILOWATCH

### Correlations to Next Generation Science Standards, Common Core ESL Standards and Common Core Math Standards

KiloWatch is a program that involves students, faculty, administration, and staff in an energy management approach that integrates inquiry-based science, math, and language arts. Students use professional energy auditing equipment to learn about technologies and practices that save energy through conducting experiments and energy audits of their school building. KiloWatch can be implemented as part of a classroom program or as an extracurricular activity. The program is organized around a series of major “actions” to be undertaken. It provides students with a real-world learning experience and is tied to state and national learning standards as outlined below.

#### Standards Addressed:

Action	Type of Curriculum	Standards Addressed
Action 1: KiloWatch Formation	Next Generation Middle School Science	<ul style="list-style-type: none"> <li>• <b>MS-ESS3-4:</b> Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems</li> <li>• <b>MS-ESS3-5:</b> Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century</li> </ul>
	ELA	<ul style="list-style-type: none"> <li>• <b>RST.6-8.3:</b> Follow a precise multistep procedure when carrying out experiments, taking measurements, or performing technical tasks</li> <li>• <b>WHST-.6-8.9:</b> Draw evidence from informational texts to support analysis, reflection, and research</li> </ul>

Action	Type of Curriculum	Standards Addressed
Action 2: Energy Scene Investigation	Next Generation Middle School Science	<ul style="list-style-type: none"> <li>• <b>MS-ESS3-3:</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment</li> <li>• <b>MS-ESS3-4:</b> Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems</li> </ul>
	ELA	<ul style="list-style-type: none"> <li>• <b>WHST-.6-8.7</b> Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration</li> <li>• <b>WHST-.6-8.9:</b> Draw evidence from informational texts to support analysis, reflection, and research</li> <li>• <b>RST.6-8.3:</b> Follow a precise multistep procedure when</li> </ul>

continued below

		<p>carrying out experiments, taking measurements, or performing technical tasks</p> <ul style="list-style-type: none"> <li>• <b>RST.6-8.4:</b> Determine the meaning of symbols, key terms, and other domain-specific words and phrases that are used in specific scientific or technical context relevant to 6-8 texts and topics</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.1.c</b> Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.1.d</b> Acknowledge new information expressed by others and, when warranted, modify their own views.</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.4</b> Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.5</b> Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.6</b> Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.</li> </ul>
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Action	Type of Curriculum	Standards Addressed
Action 3: Changing Energy Behaviors	Next Generation Middle School Science	<ul style="list-style-type: none"> <li>• <b>MS-ESS3-3:</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment</li> <li>• <b>MS-ESS3-4:</b> Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems</li> <li>• <b>MS-ESS3-5:</b> Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century</li> </ul>
	ELA	<ul style="list-style-type: none"> <li>• <b>WHST.6-8.1:</b> Write arguments focused on discipline-specific context</li> <li>• <b>WHST.6-8.2:</b> Write informational/ explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content</li> <li>• <b>WHST.6-8.9:</b> Draw evidence from informational texts to support analysis, reflection, and research</li> </ul>

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Action	Type of Curriculum	Standards Addressed
Action 4: KiloWatching	Next Generation Middle School Science	<ul style="list-style-type: none"> <li>• <b>MS-ESS3-3:</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment</li> </ul>
	ELA	<ul style="list-style-type: none"> <li>• <b>RST.6-8.3:</b> Follow a precise multistep procedure when carrying out experiments, taking measurements, or performing technical tasks</li> <li>• <b>RST.6-8.4:</b> Determine the meaning of symbols, key terms, and other domain-specific words and phrases that are used in specific scientific or technical context relevant to 6-8 texts and topics</li> <li>• <b>RST.6-8.7:</b> Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)</li> </ul>
	Math	<ul style="list-style-type: none"> <li>• <b>MP.2:</b> Reason abstractly and quantitatively</li> <li>• <b>6SP.B.5:</b> Summarize numerical data sets in relation to their context</li> <li>• <b>6.RP.A.2:</b> Understand the concept of unit rate <math>a/b</math> associated with the ratio <math>a:b</math> with <math>b \neq 0</math>, and use rate language in the context of a ratio relationship</li> <li>• <b>6.NS.3:</b> Fluently add, subtract, multiply, and divide multi-digit decimals using standard algorithm for each operation</li> <li>• <b>6.RP.A.3c:</b> Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means <math>30/100</math> times the quantity); solve problems involving finding the whole, given a part and the percent. (Combine and Relabel)</li> <li>• <b>7.RP.A.3:</b> Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error</li> <li>• <b>7.EE.B.3:</b> Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any forms, using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.</li> <li>• <b>7.NS.2:</b> Apply and extend understandings of multiplication and division and of fractions to multiply and divide rational numbers</li> </ul>

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Action	Type of Curriculum	Standards Addressed
Action 5: Celebrate Your Success	ELA	<ul style="list-style-type: none"> <li>• <b>CCSS.ELA-Literacy.SL.6-8.4</b> Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.5</b> Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.</li> <li>• <b>CCSS.ELA-Literacy.SL.6-8.6</b> Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.</li> </ul>

Action	Type of Curriculum	Standards Addressed
Special Assignments	Next Generation Middle School Science	<ul style="list-style-type: none"> <li>• Standards Addressed</li> <li>• <b>MS-ESS3-3:</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment</li> <li>• <b>MS-ESS3-5:</b> Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century</li> </ul>
	ELA	<ul style="list-style-type: none"> <li>• <b>RST.6-8.3:</b> Follow a precise multistep procedure when carrying out experiments, taking measurements, or performing technical tasks</li> <li>• <b>RST.6-8.4:</b> Determine the meaning of symbols, key terms, and other domain-specific words and phrases that are used in specific scientific or technical context relevant to 6-8 texts and topics</li> <li>• <b>RST.6-8.7:</b> Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)</li> </ul>
	Math	<ul style="list-style-type: none"> <li>• <b>MP.2:</b> Reason abstractly and quantitatively</li> <li>• <b>6SP.B.5:</b> Summarize numerical data sets in relation to their context</li> <li>• <b>6.NS.3:</b> Fluently add, subtract, multiply, and divide multi-digit decimals using standard algorithm for each operation</li> <li>• <b>6.RP.A.3c:</b> Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. (Combine and Relabel)</li> </ul>

continued below

		<ul style="list-style-type: none"><li>• <b>7EE.B.3:</b> Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any forms, using tools strategically.</li><li>• Apply properties of operations to calculate with numbers in any</li><li>• form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.</li><li>• <b>7.NS.2:</b> Apply and extend understandings of multiplication and division and of fractions to multiply and divide rational numbers</li></ul>
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