Irvine Unified School District
Next Generation Science Standards Implementation
NRC Research and NGSS Development
By the end of 12th grade all students:

- have an appreciation of the beauty and wonder of science; possess sufficient knowledge of science and engineering to engage in public discussions on related issues
- are careful consumers of scientific and technological information related to their everyday lives
- are able to continue to learn about science outside school
- have skills to enter careers of their choice, including but not limited to careers in science, technology, and engineering
Conceptual Shifts

• Preparing students for college, careers, and citizenship
• Practicing science and engineering through real world application
• Encouraging teaching in context and integrating core concepts (aligned with ELA and Math standards)
• Building concepts coherently K-12 to generate deeper understanding and application – our focus is not just the “what” but also the “how” and the “why”
• Raising engineering to the same level as inquiry science; integrated K-12
• Teaching the three dimensions of each standard: Science and Engineering Practice, Disciplinary Core Idea, and a Cross Cutting Concept
Old vs New

Old (1998) Middle School Science Standards

- **Distinguish** between atom and molecules
- **Describe** the difference between pure substances (elements and compounds) and mixtures
- **Describe** the movement of particles in solid, liquid, gas, and plasma states
- **Recognize** that there are more than 100 elements and some have similar properties as shown on the Periodic Table of Elements

New (NGSS) Middle School Science Standards

- **Construct and use models** to explain that atoms combine to form new substances of carrying complexity
- **Plan investigations** to generate evidence supporting the claim that one pure substance can be distinguished from another based on characteristic properties
- **Construct an argument** that explains the effect of adding or removing thermal energy to a pure substance in different phases and during a phase change in terms of atomic and molecular motion
NGSS Timeline

2012-13

Awareness Phase

2013-14

Transition Phase

2015-16

Implementation Phase

2016-17

CA Science Framework

2017-18

NGSS State Assessment Pilot

2018-19

NGSS State Assessment Field Test

2019-20

NGSS State Assessment Operational

CA NGSS-Aligned Curricula

IUSD Early Awareness

IUSD Alignment of Current Curriculum

IUSD Instructional Shifts and Rollout Plan

IUSD Instructional Shifts and Restructuring of Courses with Standards Aligned Units and Assessments

IUSD Begin Implementing Aligned Courses

IUSD Instructional Materials Adoption
The Journey
Next Generation Science Standards Implementation Committee

- Current reality of science education in IUSD
- Develop a vision of what a rigorous 21st century Science education looks like
- Identified the needs of all stakeholders
Student Voice
Identified Implementation Needs

- College and Career Readiness for All
- Equity of Access and Experiences
- Engaging Science Courses with Real World Application
- Meet the Instructional Needs of All Students
- Manageable and Strategic Transition
- Teacher and Administrator Efficacy and Preparedness
- Clear Communication
The Work

Transition Timeline
Instructional Agreements
Course Sequences
Professional Development
Course Model Decisions
Resources to Support a Smooth Transition

Designated Science Lead Teachers:

- Develop course scope and sequences, identify resources
- Develop exemplary units and collaborative assessments
- Finalize timeline for implementation, professional development, and instructional recommendations