Climate Change Vulnerabilty of Trees Commonly Planted or Being Considered for Planting in the Twin Cities Region
DRAFT-November 14, 2016

Latin Name	Common Name	Planted Adapt Class	Natural Adapt Class	Effect from Zone Shift-low emissions	Effect from Zone Shift-high emissions	Tree Atlas-Low Emissions	Tree Atlas-High Emissions	Vulnerability-developed/ planted sites	Vulnerability-natural areas
Abies balsamea	balsam fir	medium	na	negative	negative			moderate-high	
Abies concolor	white fir	medium	na	no effect	negative			moderate-high	
abies fraseri	Fraser Fir	medium	na	no effect	negative			moderate-high	
abies koreana	Korean Fir	medium	na	no effect	positive			low-moderate	
Acer ginnala	Amur maple	medium	na	no effect	negative			moderate-high	
Acer negundo	boxelder	medium	high			small decrease	small increase	moderate	low-moderate
Acer nigrum	black maple	medium	high			extirpated	extirpated	moderate-high	moderate
Acer platanoides	Norway maple	high	high	no effect	negative			moderate	moderate
Acer rubrum	red maple	medium	high			no change	small increase	low-moderate	low
Acer saccharinum	silver maple	medium	high			large increase	large increase	low-moderate	low
Acer saccharum	sugar maple	medium	high			no change	large decrease	moderate-high	moderate
Acer tataricum	tatarian maple	medium	na	no effect	negative			moderate-high	
Acer triflorum	threeflower maple	medium	na	positive	negative			moderate	
Acer truncatum	Shantung maple	high	na	positive	positive			low	
Acer x freemanii	Freeman maple	high	na	no effect	no effect			low	
Aescleus glabra	Ohio buckeye	medium	low			NA	new habitat	low-moderate	moderate
Aescleus hippocastanatum	horsechestnut	medium	na	no effect	no effect			low-moderate	
Aesculus flava (octandra)	yellow buckeye	medium	na	no effect	no effect			low-moderate	
Aesculus pavia	red buckeye	high	na	positive	positive			low	
Amelanchier arborea	downy serviceberry	high	high	no effect	no effect			low	low
Amelanchier laevis	Allegheny serviceberry	high	high	no effect	no effect			low	low
Betula alleghaniensis	yellow birch	high	high			extirpated	extirpated	moderate	moderate
Betula nigra	river birch	medium	medium			small increase	small decrease	moderate	moderate
Betula papyrifera	paper birch	medium	medium			large decrease	large decrease	moderate-high	moderate-high
Betula pendula	European White birch	low	na	no effect	negative			moderate-high	
Betula populifolia	gray birch	low	medium	negative	negative			high	
Carpinus caroliniana	American hornbeam	high	high			no change	small increase	low	low
Carya cordiformis	bitternut hickory	medium	medium			large increase	small increase	low-moderate	low-moderate
Carya glabra	pignut hickory	medium	high			new habitat	new habitat	low-moderate	low
Carya illinoinensis	pecan	low	na			NA	new habitat	moderate	
Carya laciniosa	shellbark hickory	low	medium	positive	positive			moderate	
Carya ovata	shagbark hickory	medium	high			new habitat	new habitat	low-moderate	

*Vulnerability for ash species is considered high due to emerald ash borer
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Catalpa ovata	Chinese catalpa	medium	na	positive	positive			low-moderate	
Catalpa speciosa	northern catalpa	low	low	no effect	no effect			moderate	
Celtis laevigata	sugarberry	medium	na			NA	new habitat	low-moderate	
Celtis occidentalis	northern hackberry	high	high			large increase	large increase	low	low
Cercidiphyllum japonicum	Katsura tree	low	na	no effect	no effect			moderate	
Cercis canadensis	eastern redbud	medium	high			NA	new habitat	low-moderate	low
Cladrastis kentukea	yellowwood	high	na	no effect	no effect			low	
Cornus alternifolia	pagoda dogwood	medium	medium	no effect	negative			moderate	moderate
Crataegus acutifolia	cockspur hawthorn	high	na	no effect	negative			moderate	
Fagus grandifolia	American beech	medium	medium			new habitat	new habitat	low-moderate	
Fagus sylvatica	European beech	medium	na	no effect	no effect			low-moderate	low-moderate
Fraxinus americana	white ash	low	medium			small increase	large increase	high*	high*
Fraxinus nigra	black Ash	low	low			small decrease	small decrease	high*	high*
Fraxinus pennslyvanica	Green ash	medium	medium			small decrease	no change	high*	high*
Gingko biloba	gingko/maidenhair tree	high	na	no effect	no effect			low	low
Gleditsia triacanthos	honeylocust	medium	high			small increase	small increase	low-moderate	low
Gymnocladus dioicus	Kentucky coffeetree	high	na	no effect	no effect			low	
Juglans nigra	black walnut	medium	medium			large increase	large increase	low-moderate	low-moderate
Juniperus virginiana	eastern redcedar	high	medium			large increase	large increase	low	low-moderate
Liriodendron tulipifera	tuliptree	low	na	positive	positive			moderate	
Maackia amurensis	Amur maackia	high	na	no effect	negative			moderate	
Maclura pomifera	Osage orange	high	na			new habitat	new habitat	low	
Magnolia acuminata	cucumbertree	medium	na	positive	positive			low-moderate	
Magnolia stellata	star magnolia	medium	na	no effect	no effect			moderate	
Malus spp	crabapple species	medium	na	no effect	no effect			moderate	
Metasequoia glyptostroboides	dawn redwood	medium	na	positive	positive			low-moderate	
Morus alba	white mulberry	medium	high	no effect	no effect			moderate	
Morus rubra	red mulberry	medium	medium			new habitat	new habitat	low-moderate	
Ostrya virginiana	Ironwood (easternhophornbe	high	high			no change	no change	low	low
Phellodendron amurense	Amur corktree	medium	na	no effect	no effect			moderate	
Picea abies	Norway spruce	medium	na	no effect	no effect			moderate	

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Picea canadensis (glauca)	White spruce	medium	na			no change	no change	moderate	
Picea glauca var. densata	Black Hills spruce	medium	na	no effect	negative			moderate-high	
Picea pungens	blue spruce	medium	na	no effect	no effect			moderate	
Pinus banksiana	jack pine	low	na			small decrease	small decrease	high	
Pinus nigra	Austrian pine	medium	na	no effect	no effect			moderate	
Pinus ponderosa	ponderosa Pine	low	na	no effect	no effect			moderate-high	
Pinus resinosa	red pine	low	na			small increase	no change	moderate	
Pinus strobus	white pine	low	medium			no change	large decrease	moderate-high	
Pinus sylvestris	Scotch pine	medium	na	no effect	negative			moderate-high	
Platanus occidentalis	American sycamore	medium	na			NA	new habitat	low-moderate	
Platanus x acerifolia	planetree	medium	na	no effect	no effect			low-moderate	low-moderate
Populus aurea (tremuloides)	quaking aspen	low	medium			small decrease	large decrease	high	moderate-high
Populus balsamifera	balsam poplar	low	medium			no change	small increase	moderate	low-moderate
Populus deltoides	cottonwood	low	medium			small increase	large increase	moderate	low-moderate
Populus grandidentata	big-toothed aspen	low	high			small decrease	large decrease	high	moderate
Prunus americana	American plum	medium	medium			small increase	large increase	low-moderate	low-moderate
Prunus cerasus	sour Cherry	medium	na	no effect	no effect			moderate	
Prunus maackii	Amur cherry	high	na	no effect	no effect			low	
Prunus mandshurica	apricot (Manchurian)	low	na	no effect	no effect			moderate-high	
Prunus pensylvanica	pin cherry	low	medium			extirpated	extirpated	high	moderate-high
Prunus serotina	black cherry	low	medium			small increase	small decrease	high	moderate-high
Prunus serrulata 'Kwanzan'	Kwanzan Cherry	low	na	positive	positive			moderate	
Prunus virginiana	common chokecherry	medium	medium			small decrease	extirpated	moderate-high	moderate-high
Prunus x cistena	purpleleaf Sand Cherry	medium	na	no effect	no effect			moderate	
Pseudotsuga mucronata	douglas fir	low	na	no effect	negative			high	
Pyrus spp.	pear	medium	na	no effect	no effect			moderate	
Pyrus ussuriensis	Ussurian Pear	low	na	no effect	no effect			moderate-high	
Quercus alba	white oak	medium	high			small increase	no change	low-moderate	low
Quercus bicolor	swamp white oak	high	medium			no change	small increase	low	low-moderate
Quercus coccinea	scarlet oak	high	na	positive	positive			low	
Quercus ellipsoidalis	northern pin oak (Hill's Oak)	medium	medium			no change	small decrease	moderate	moderate

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Quercus imbricaria	shingle oak	high	na			NA	new habitat	low	
Quercus macrocarpa	bur oak	high	high			no change	no change	low	low
Quercus muehlenbergii	chinkapin oak	medium	na			new habitat	new habitat	low-moderate	
Quercus palustris	pin oak	medium	medium			NA	new habitat	low-moderate	low-moderate
Quercus prinus	chestnut oak	high	high	positive	positive			low	low
Quercus rubra	northern red oak	high	high			small decrease	large decrease	moderate	moderate
Quercus velutina	black oak	medium	high			large increase	small increase	low-moderate	low
Quercus x macdanielii	heritage oak	high	na	no effect	no effect			low	
Rhamnus cathartica	European buckthorn	high	high	no effect	no effect			low	low
Rhus typhina	staghorn sumac	medium	high	no effect	no effect			moderate	low
Robinia pseudoacacia	black locust	medium	high			large increase	large increase	low-moderate	low
Salix amygdaloides	peachleaf willow	low	low			no change	small increase	moderate-high	moderate-high
Salix babylonica	weeping willow	medium	na	positive	positive			low-moderate	
Salix discolor	pussy willow	low	medium	no effect	no effect			moderate-high	moderate-high
Salix nigra	black willow	low	Low			no change	small increase	moderate	moderate
Sorbus alnifolia	Korean mountain-ash	medium	na	no effect	no effect			moderate	
Sorbus aucoparia	European Mountain Ash	medium	na	no effect	negative			moderate-high	
Sorbus decora	showy Mountain Ash	low	na	negative	negative			high	
Syringa reticulata	Japanese tree lilac	high	na	no effect	negative			moderate	
Thuja occidentalis	northern white cedar	medium	medium			no change	small increase	low-moderate	
Tilia americana	American basswood	medium	medium			small decrease	small decrease	moderate-high	moderate-high
Tilia cordata	little leaf linden	high	na	no effect	no effect			low	
Tilia x euchlora	Crimean linden	high	na	no effect	negative			moderate	
Ulmus americana	American elm	medium	high			small increase	small increase	low-moderate	low
Ulmus spp	elm cultivars	high	na	no effect	no effect			low	
Ulmus pumila	Siberian elm	medium	high	no effect	no effect			low-moderate	low
Ulmus rubra	slippery elm	medium	medium			no change	small increase	low-moderate	low-moderate
Viburnum lentago	nannyberry	high	high	no effect	no effect			low	low

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